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International Journal of Cognitive Research in Science, Engineering and Education

(IJCRSEE)

EDITORIAL

International Journal of Cognitive Research in Science, Engineering and Education (IJCRSEE) is an open access international peer-reviewed, open-access journal, which provides a platform for highlighting and discussing various cognitive science issues, social sciences dealing with the problems of cognition (and its evolution) within some specific subject field - education, philosophical, psychological, linguistic, mathematical, psychogenetic, pedagogical, ergonomic. Special emphasis is placed on educational practice in schools, colleges and universities. Editorial Board strives to provide a possibility for the scientists of different fields to publish the results of their research, technical and theoretical studies. IJCRSEE is multidisciplinary in approach, and will publish a great range of papers: reports of qualitative case studies, quantitative experiments and surveys, mixed method studies, action researches, meta-analyses, discussions of conceptual and methodological issues, etc. IJCRSEE publisher is The Association for the Development of Science, Engineering and Education, Vranje, Serbia and copublisher is College for Preschool Teachers, Aleksinac, Serbia.

IJCRSEE particularly welcomes articles on the results of scientific research in various fields of cognitive science and social sciences in education, psychology, artificial intelligence, linguistics, philosophy and neuroscience catering for international and multidisciplinary audience. Readers include those in cognitive psychology, special education, education, adult education, educational psychology, school psychology, speech and language, and public policy. IJCRSEE has regular sections: Original Research, Review Articles, Studies and articles, Book Reviews, Case Studies, and is published three time per year. This journal provides an immediate open access to its contents, which makes research results available to the public based on the global exchange of knowledge. The journal also offers access to uncorrected and corrected proofs of articles before they are published.

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Based on the reviewers' comments the Chief Editor makes a decision to:

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An acceptance letter is sent to the author and the final manuscript is forwarded to production. Sometimes, the authors are requested to revise in accordance with reviewers' comments and submit the updated version or their manuscript to the Chief Editor. The time for review can be set to 2-8 weeks depending on the discipline and type of additional data, information or argument required. The authors are requested to make substantial revisions to their manuscripts and resubmit for a new evaluation. A rejection letter is sent to the author and the manuscript is archived. Reviewers might be informed about the decision.

After review a manuscript goes to the Copy Editor who will correct the manuscript concerning the correct referencing system, confirmation with the journal style and layout. When Copy Editor finishes his/her work they send manuscripts to the Layout editor.

Layout Editor is responsible for structuring the original manuscript, including figures and tables, into an article, activating necessary links and preparing the manuscript in the various formats, in our case PDF and HTML format. When Layout Editor finishes his/her job they send manuscripts to Proof Editor.

Proof Editor confirms that the manuscript has gone through all the stages and can be published.

This issue has 9 articles (7 original research and 2 review articles). Our future plan is to increase the number of quality research papers from all fields of science, engineering and education. The editors seek to publish articles from a wide variety of academic disciplines and substantive fields; they are looking forward to substantial improvement of educational processes and outcomes.

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SPECIFICS OF MORAL CHOICES MADE BY CHILDREN AGED 6 TO 8 YEARS IN SITUATIONS WITH ETHNOCULTURAL CONTEXT

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ABSTRACT

The paper describes the experimental study of the children's specific moral choices from several perspectives. The quantitative and qualitative results of the study were assessed through comparison of the diverse kinds of correct and incorrect moral choices in children aged 6–7 years old and 7–8 years old, the specifics of these choices revealed through resolving two types of specially designed situations with ethnocultural context, namely the situations requiring the child's personal engagement (situations of moral choice) and depersonalized situations (situations with moral challenges, such as "Continue the sentence").

Keywords:

*children's moral choices,
ethnocultural context situations,
diagnostics of the moral choices made
by children aged 6–8,
personal engagement,
depersonalized situations.*

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1. INTRODUCTION

A human's ability to assume responsibility for both their own well-being and the well-being of the society is an important indicator of a mature personality. Therefore, the categories of "choice," "freedom of choice," "moral choice" receive a special meaning during the early stages of a child's development. True morality is determined by the ability to make free, independent, unforced and voluntary choice that involves sacrificing or neglecting one's personal benefit in favor of an act or deed of high moral value.

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A moral choice is a moral act of independent and conscious preference of a specific mode of behavior or choice of action based on the person's moral decision. This means that moral rules urge a person to choose the morally justified side, i.e. to do good, sometimes against one's own interests, desires or needs. The terms "moral choice" and "ethical decision" are often used interchangeably. The authors believe that *moral choice* is the process of choosing based on moral decision-making when presented with alternative actions, with an aim to prefer one of such actions. The *result of the moral decision* made by a particular person is therefore his/her *moral choice*.

The situations generating a conflict between alternative actions that are grounded on "good" or "evil" are the *situations of moral choice*. A *situation of moral choice* takes place when the interests of other people, despite conflicting with the interests of the child, are attributed with higher moral value than the child's own ones.

Children's opportunities for indepen-

dent moral-driven activities are very limited in real life, so situations of moral choice create a tool for expanding the area where the child can demonstrate imagined or real moral-driven behavior.

Since persistent manifestations of correct moral choices make an indicator of fairly high moral standards, it is very important to start providing pedagogical support in developing abilities for such choices as early as in childhood, especially in the age between 6 and 8 years old. The research conducted over the past few years suggests that the psychosocial development of modern children has intensified, and so the descriptions of age-specific traits in children offered decades ago are no longer consistent with today's results of the observation of children's behavior (Savenkov, 2015). This calls for the expansion and clarification of scientific beliefs about age-specific characteristics of moral choice made by children aged 6–8, as well as for identification and differentiation of the specifics of such choices in groups of children aged 6–7 and 7–8. This could contribute to the concept of factoring these specifics into the process of pedagogical regulation of moral choices in preschool and primary school-aged children.

The study of the specifics of moral choices made by children in situations with ethnocultural context is important in terms of addressing the challenges in the ethnocultural education of children in the modern world full of interethnic risks and conflicts.

The logics behind the study of the specifics of moral choices of children aged 6–8 consisted of the following steps: identifying the purpose, hypothesis and methods of study; selecting, analyzing and designing situations of moral choice and situations with ethnocultural context, with the subsequent integration of both moral and ethnocultural contexts; grouping these situations by types and kinds; designing and performing the diagnostics of the moral choices made by children aged 6–8; analyzing, processing and interpreting the results of the diagnostics; identifying special aspects of the moral choices made by the children in situations with ethnocultural context; formulating findings and practical guidelines along with choosing possible prospective paths for studying this problem in future.

2. LITERATURE REVIEW

Various aspects of human moral decision-making and the ways of using situations

of choice to solve moral problems are covered in the Russian works on philosophy, psychology and pedagogy. Moral choices are examined in different contexts (such as folklore, Islamic traditions, politics, teenage subcultures, etc.). Although the problem of children's moral decision-making is by no means new, it remains under discussion in relation to the early stages of a child's development.

I. Znamenskaya, I. Sozinov and Y. Aleksandrov (2013) have proved that at the early stages of ontogeny (3–6 years old), children rely in their moral choices on intuitive criteria, whereas between 7 and 9 years of age they employ the rational choice components that begin to shape at that age.

O. Panfilova (2015) established and unraveled the connection between different types of ethical situations and the moral behavior of primary school-aged children. She identified the stages of the technology used to model situations with different choices of behavior.

There has been some research into the moral and ethical assessment mechanisms in primary school age, based on which it is possible to model situations of moral choice (Kalinina, 2014). N. Laricheva (2015) demonstrated that through the analysis of the situations of moral choice as depicted in fiction, it is possible to prepare primary school-aged children for moral decision-making in resolving real-life situations.

The availability of moral choice for children of primary school age has been observed by a number of researchers (Sushkova and Gerasimova, 2017a, 2017b; Sushkova and Malyutina, 2015, 2016). The ability to make moral choices in children of this age forms as part of the developing moral assessment activity of their mind and is triggered by the need for approval and acceptance. D. Kirilina (2016) established that children with adverse sociometric conditions tend to make more positive moral choices than children with favorable sociometric conditions.

I. Sushkova and Ye. Malyutina (2015) analyzed the phenomenon of "situation" and created groups of situations for social and personal development of schoolchildren by types, kinds and subcategories, which include situations of moral choice. The authors consider such situations to be part of the technology of social and personal development of preschoolers (Sushkova and Malyutina, 2016). The educational potential of problem-based pedagogical situations in the formation of moral concepts in preschool-aged children and the ways to model such situations are dis-

cussed in the works by Yu. Lavrinyuk (2017), L. Pakhomova, N. Kondratyeva, N. Samodelova (2017). The literature describes possibilities of using the situations of moral choice for designing regional models of ethnocultural education of preschoolers (Sushkova and Gerasimova, 2017a, 2017b) and for diagnosing the motivational component of their social success (Pronina, Yakovleva and Sushkova, 2017).

The foreign literature highlights the issues of moral decision-making in the context of the Christian view of ethics (Scheid, 2015), Islamic morality (Lovat, 2016), and the state standards of school initiatives on the development of moral ideals in children (De Ruyter and Steutel, 2013). I. Chigrinova (2013) dwelled on the core perceptual paradigms of the interpretation of moral choice in modern cognitive psychology. She evaluated the strong and weak points of each paradigm and suggested the ways to tackle the existing contradictions by virtue of the concept of the integrity of a person's intellectual and personal potential. C. Moore and A. Tenbrunsel (2014) looked into the dependency between the cognitive complexity and moral choice. They established that decisions that were made based on contemplations at low and high levels of cognitive complexity are less moral than those made based on contemplations at medium levels of complexity.

R. McDermott and P. Hatemi (2017) revealed the effect caused by a person's level of aggression on his/her foreign policy decisions and moral choices. Other authors studied the link between people's moral judgements and the digital context when using smartphones in situations of moral choice (Barque-Duran, Pothos and Hampton, 2017). R. Burr (2014) showed in her ethnographical study that the concept of a "good child in Vietnam" largely depends on the circumstances and expectations of a particular family, while the moral choice of such children is determined by the acknowledgement of their position in the family hierarchy and their willingness to subordinate their own individual needs to the collective good. R. L. Johnson, J. Liu and Y. Burgess (2017) developed a summarized model of ethical decision-making, which can be applied to the resolution of ethical dilemmas associated with student assessment. The elements of this model include a critical incident giving rise to the ethical dilemma; identification of the conflict elements; decisions about the ethicality of the elements; justification of the decisions; implications; and alternative suggestions.

S. Hertz and T. Krettenauer (2014) researched into the effect of emotions on children's moral choices and found out that the anticipation of moral emotions predicted an increased likelihood of moral choices in anti-social and prosocial contexts. In younger children, anticipated moral emotions predicted moral choice for prosocial actions, but not for antisocial actions.

Summing up what has been said, despite a certain level of the current focus of researchers on the problem of moral choices in children, some questions remain understudied, such as the relation between the moral and ethnic/cultural components of situations of choice; specifics of moral choices made by children aged 6–8 in such situations; the age-specific differences in the moral choice outcomes and their motivations. There is also no scientific opinion about the diversity of moral choices in children aged 6–7 and 7–8, as well as about the relations between different kinds and types of moral choices in children aged 6–7 and 7–8 in different situations with ethnocultural context.

Therefore, the research into the specifics of moral choices made by children in situations with ethnocultural context will help expand the scientific ideas about age-specific characteristics of moral choices in groups of children aged 6–7 and 7–8. Academic literature does not offer any information on differentiated approaches to the pedagogical regulation of moral choices of children aged 6–7 and 7–8 depending on the kinds of those choices.

For that reason, the research hypothesis here consisted in the postulate that the moral choices made by groups of children aged 6–7 and 7–8 have certain specifics which can eventually lay the foundation for the pedagogical regulation of those choices. The *purpose of the study* is to identify, compare and analyze the specifics of moral choices made by children aged 6–7 and 7–8 in resolving situations with ethnocultural context.

3. MATERIALS AND METHODS

The empirical study undertaken in 2017 involved 120 children of preschool and primary school age (n=120) who were attending educational facilities (60 children aged 6–7 y.o. and 60 children aged 7–8 y.o.) in Moscow, Yelets and Lipetsk, and across the Lipetsk Region. The age range was min. 6 and max. 8.

The scientific background for the experimental study (pedagogical diagnostic) lay in

the research into the early elements of moral perception in children aged 6–7, which had been conducted earlier by [I. Sushkova \(2017\)](#).

To provide a practical basis for the study, the authors designed two kinds of imaginary situations with ethnocultural context. The situations of the first kind were the *situations with the personal engagement* of a child. The situations of the second kind were *depersonalized situations*.

The situations of the first type (situations with the child's personal engagement) included situations of the following two types:

Type 1 covers "situations of preference," which involve the need to choose a nationality which is identical to one's own; a nationality which is different to one's own; or show equal preference ("Imagine you entered a bus and inside you see two vacant seats – one beside a Russian man (the nationality here should be identical to the child's own), and another one – beside a curly-haired, dark-skinned man. Which one will you sit with? Why?"). Such situations are modifications of similar situations suggested in various tolerance tests.

Type 2 covers situations of moral choice illustrating various moral ethnocultural-based collisions with multiple choices. The content of such situations activates the children's knowledge about moral norms and behavior rules in respect to a person whose nationality is different from theirs, and at the same time brings on alternative scenarios where their personal interests are respected or neglected in an imaginary way. The dialectically significant content of these situations reflects pairs of opposites in terms of morality (mercy vs. insensitivity, mutual help vs. selfishness, politeness vs. rudeness, and so on), for example, "Imagine you went outside to play football with your mates in the yard and saw your best friend bully a Tajik child (the nationality here should be different from the child's nationality) who has recently moved here from Tajikistan and lives in your house. Your friend won't let the newcomer play with him, he makes fun of him, calls him names just because his appearances of a Tajik boy are different from the way Russian people look. What will you do? Why?" The use of these situations was based on the method of diagnosing the early elements of moral perception in children aged 5–6, which was previously developed by [I. Sushkova \(2017\)](#).

The Type 2 situations (depersonalized situations) include situations with an integrated moral and ethnocultural content. These situations were devised based on the modified

"Continue the sentence" method (Saks-Sidney) enriched with some ethnocultural context ("If children pick on or bully a child dressed in ethnic clothes (e.g. a girl wrapped in a large veil that leaves only eyes uncovered and is called *hijab*), then ..." "Why?").

Children were offered to solve 12 situations of Type 1 (6 situations of the first kind and 6 situations of the second kind) and 6 situations of Type 2, and then answer the question "Why?" The experiment was being conducted with each child individually, in three phases. During the first and second phases, the children would be solving the situations of Type 1 (the situations with the children's personal engagement), of which in the first phase – 6 situations of preference, and in the second phase – 6 situations of moral choice. During the third phase, the children were offered the situations of Type 2 (depersonalized situations), specifically 6 situations of the kind "Continue the sentence."

After the children solved the situations of moral choice and suggested their solutions to the depersonalized "Continue the sentence" situations, all choices made by each child were classified by the type and kind suggested earlier by [I. Sushkova \(2017\)](#).

The "correct" type of moral choice includes the following kinds: positive, trade-off, partially positive. The "incorrect" type of moral choice includes the following kinds: declarative, partially negative, disguising, negative. The third type of moral choice is hesitative. The kinds of choices were grouped by their *degree of the expressiveness of moral significance*. The list of the kinds of moral choices given below is in the descending order of this significance – from the most significant one from the perspective of morality to the one completely lacking that significance.

Positive choice is a clear choice made independently by the child in favor of going for a morally valuable action, deed, attitude, often involving either waiving the child's own interests and needs or somehow prejudicing them.

Trade-off choice is a mutually beneficial resolution of the situation when the need to pursue personal interests does not interfere with morally oriented actions and deeds.

Partially positive choice allows the child to combine morally positive behavior with pursuing his/her own interests and needs.

Hesitative choice encompasses the child's doubts when he/she responds, "I don't know."

Declarative choice involves the child's

verbalization of a certain moral norm or behavior rule without making the actual personal choice (such as “We are supposed to help people!”).

Partially negative choice is a choice of the child’s own interests with some slight consideration for the needs of the others.

Disguising choice (*disguise*) is about avoiding a direct rejection in an attempt to disguise it; a conscious wish to evade a negative answer.

Negative choice is an unequivocal rejection of a morally valuable action, deed or attitude, often with an intention to pursue one’s own personal interests, etc.

Each kind of choice made was awarded a certain number of points: positive – 8 points, trade-off – 7 points, partially positive – 6 points, hesitant – 5 points, declarative – 4 points, partially negative – 3 points, disguising – 2 points, negative – 1 point.

The differences between the kinds of moral choices in different types of situations in children aged 6–7 and 7–8 were identified using the Wilcoxon–Mann–Whitney test.

Each kind of choice made by a child in situations of preference was awarded points depending on the degree of moral significance attached to this choice: equal preference – 3 points, preference of a nationality which is different from one’s own – 2 points, preference of a nationality which is equal to one’s own – 1 point.

The most significant kinds of preference are the equal preference and the preference of a nationality which is different from one’s own. The least significant kind of preference is the preference of a nationality which is equal to one’s own. To measure the correlation between the results of solving situations of preference and the types of moral choices in children aged 6–8, the types of moral choices were rated in the following manner: correct – 2 points, incorrect – 0 points.

The correlation between the results of solving situations of preference and the types of moral choices in children aged 6–8 was established using the Spearman’s nonparametric rank correlation coefficient (ρ).

4. RESULTS

The total number of choices made by 60 children aged 6–7 was 1,480 (360 – in situations of preference, 360 – in situations of moral choice, 360 – in “Continue the sentence” situations). The total number of choices made

by 60 children aged 7–8 was 1,480 (360 – in situations of preference, 360 – in situations of moral choice, 360 – in “Continue the sentence” situations).

The results of the study are given in the Tables 1, 2, 3, 4, 5 below.

Table 1. Kinds of children’s choices in situations of preference

Kind of choice	6–7 y.o.	7–8 y.o.
Preference of a nationality which is identical to one’s own	234	65%
Preference of a nationality which is different from one’s own	42	11.67 %
Equal preference	84	23.33 %
Total:	360	360

The table shows that in the age group of 6–7 years, the prevailing choice is the preference of a nationality which is identical to one’s own (65%), while in the age group of 7–8 years it is an equal preference. At the same time, the differences between the percentages of children preferring a nationality which is different from their own in these age groups were insignificant – 11.67% and 15% respectively. In the group of children aged 7–8, the number of equal-preference choices increases noticeably (more than doubles) compared to the group of children aged 6–7 (50.55% compared to 23.33%).

Table 2. Types and kinds of moral choices in children aged 6–7 and 7–8 made in situations with the child’s personal engagement and in depersonalized situations

Types and kinds of moral choice	Situations with the child’s personal engagement: (situations of moral choice)		Depersonalized situations (“Continue the sentence” situations)	
	6–7 y.o.	7–8 y.o.	6–7 y.o.	7–8 y.o.
Correct type	222	276	276	324
Positive	198	210	252	300
Trade-off	24	48	24	24
Partially positive	0	18	0	0
Hesitative type	0	6	6	0
Incorrect type	138	78	78	36
Declarative	12	6	24	30
Partially negative	12	24	0	0
Disguising	18	18	18	6
Negative	96	30	36	0
Total choices	360	360	360	360

The total numbers of correct and incorrect types of moral choices in children aged 6–7 are 498 correct ones and 216 incorrect ones (i.e. 69.17% and 30%, respectively), while in children aged 7–8 it is 600 correct ones and 114 incorrect ones (i.e. 83.33% and 15.83%, respectively). In other words, the majority of children aged 6–8 demonstrated the ability to make the correct moral choice in an imaginary situation, both in situations with the child's personal engagement and in depersonalized situations. In the age group of 7–8 y.o. this ability is stronger in situations of the kind "Continue the sentence." It is reasonable to assume that this is explained by the child's disengagement in such situation, which obviously makes it easier for him/her to make the choice. At the same time, judging from the results of the diagnostics, one can conclude that the personalization of the situations of moral choice drives down the corresponding positive results in children aged 6–7 and 7–8 compared to "Continue the sentence" situations. The impersonal nature of "Continue the sentence" situations, on the other hand, increases the number of positive results in children aged both 6–7 and 7–8.

None of the children aged 6–7 were capable of making a partially positive choice, both in situations of moral choice and in situations of the kind "Continue the sentence." None of the children aged 7–8 made the partially positive choice in "Continue the sentence" situations.

Children aged both 6–7 and 7–8 are able to offer a trade-off as a solution in situations with ethnocultural context. In children aged 7–8, this capability is higher in situations of moral choice.

There is a certain alignment of the number of incorrect choices and the number of negative choices of this type. In the age group of 6–7 y.o., when presented with situations of moral choice, children tended to make the choice of this kind about three times as more often as in the age group of 7–8 y.o.

Some parts of both groups did make incorrect moral choices, but in the group of children aged 7–8 there were much less of such choices in situations of the kind "Continue the sentence." The greatest number of children who made incorrect choices was recorded in the age group of 6–7 y.o. in situations with the children's personal engagement (the situations of moral choice). This is apparently related to the concrete character of the situation in which the child's persona gets to participate.

The disguising kind of choice in situ-

ations of moral choice was made in equal quantities by children of both 6–7 years and 7–8 years. However, in situations of the kind "Continue the sentence" in the group of children aged 7–8, the number of choices of that kind was made three times less often.

Children aged 6–7 made the declarative kind of choice in situations of moral choice twice as many times as children aged 7–8. Children aged 7–8 made the declarative choice more often in depersonalized situations. In "Continue the sentence" situations, the difference in the number of such choices between children of 6–7 years and children of 7–8 years is small. This probably has to do with the lack of personalization in these situations, which prompts the children to make declarative statements.

Zero or quite low number of partially positive and hesitant moral choices in children aged 6–7 are probably attributable to the inclination to unambiguity and clarity in answers, the incapability of offering half-way solutions, which is very characteristic of older preschoolers.

The partially negative choices in situations with the children's personal engagement were made twice as more often by children aged 7–8 as compared to children aged 6–7. The completely missing partially negative choice in "Continue the sentence" situations in groups of both 6–7 y.o. and 7–8 y.o. indicates that the depersonalized nature of situations of this type does not provide any incentives for finding a partial solution.

Table 3. Difference in kinds of moral choices in different types of situations between children aged 6–7 and 7–8 (according to the Wilcoxon–Mann–Whitney test)

	7–8 y.o. (n=60)	
6–7 y.o. (n=60)	Moral choices in situations with a child's personal engagement: (situations of moral choice)	Moral choices in depersonalized situations (situations of the kind "Continue the sentence")
Moral choices in situations with a child's personal engagement: (situations of moral choice)	1,536.3*	1,532.7*
Moral choices in depersonalized situations (situations of the kind "Continue the sentence")	1,490.1*	1,501.6*

*given p = 0.05

The results provided in the table show that the verifiable differences in the kinds of moral choices between the groups of children aged 6–7 and 7–8 do exist.

Table 4. Correlation between the results of solving situations of preference and the types of moral choices made by children aged 6–8, the complete sample (n=120) (Spearman's rank correlation coefficient, p)

Types of moral choices in situations with moral challenges (situations of moral choice and situations of the kind "Continue the sentence")	
The results of solving situations of preference (equal preference, the preference of a nationality which is different from one's own, the preference of a nationality which is identical to one's own)	0.188 (*with p = 0.05)

The results provided in Table 4 point to the existence of the correlation between the results of solving situations of preference and the types of moral choices in children aged 6–8.

The study has shown that the correct and incorrect types of moral choices in children are in a certain correlation with the results of solving situations of preference by children aged 6–8.

Table 5. Correlation between correct/incorrect types of moral choices and the results of solving situations of preference by children aged 6–8 y.o.

Number of kinds of choices in children aged 6–8 in situations of preference	Number of correct and incorrect choices made by children aged 6–8 in situations with moral challenges (situations of moral choice and situations of the kind "Continue the sentence")	
	Correct choices	Incorrect choices
Preference of a nationality which is identical to one's own: 358		
Preference of a nationality which is different from one's own: 96		
Equal preference: 266		
Total: 720	1,098	234

The table demonstrates that the total number of correct moral choices is well above the number of incorrect ones. The total number of the most morally significant preferences, namely the preference of a nationality which is different from one's own and equal preference also exceeds the number of preferences of a nationality which is identical to one's own.

In the group of children aged 6–7, the number of correct moral choices (498) is above the number of incorrect ones (216). That said, the total number of the most morally significant preferences, namely the preference of a nationality which is different from one's own and equal preference (126 in total) is less than the number of preferences of a nationality which is identical to one's own (234). Therefore, the considerable number of preferences of a nationality which is identical to one's own (234 out of 360) in most cases does not prevent the children from making the right moral choices. In the group of children aged 7–8, the number of correct choices (600) prevails over the number of incorrect ones (114). This is consistent with the total number of the most morally significant preferences, namely the preference of a nationality which is different from one's own and equal preference (136 in total), exceeding the number of preference of a nationality which is identical to one's own (124).

5. DISCUSSION

To sum up the above, the study helped reveal the specifics of moral choices which both children aged 6–8 as a whole and children from age groups of 6–7 y.o. and 7–8 y.o. typically make when solving imaginary situations with ethnocultural context.

The specifics of moral choices which are characteristic of children aged 6–8 include:

- adequate perception of the moral meaning of situations with ethnocultural context;
- a wide range of types and kinds of moral choices;

- differing numbers of types (correct, incorrect) and kinds (positive, partially positive, negative, partially negative, trade-off, hesitant, declarative, disguising) of moral choices in children aged 6–7 and children aged 7–8;

- the prevalence of the correct type of choice in situations of moral choice and situations of the kind "Continue the sentence";

- the existence of the correlation between the results of solving situations of pref-

erence and the types of moral choices;

- the existence of differences in the results of solving situations with personal engagement (situations of moral choice) and depersonalized situations (situations of the kind "Continue the sentence");

- the absence of "partially negative" choices among the ones chosen in "Continue the sentence" situations whose impersonal nature does not encourage partial solutions;

- the ability to "disguise" negative choices;

- the personal nature of situations of moral choice drives down the number of positive results as compared with situations of the kind "Continue the sentence," whereas the impersonal nature of "Continue the sentence" situations increases the number of positive results in children;

- the particular pedagogical value in the situations with the child's personal engagement (the situations of moral choice) as compared with depersonalized situations (the "Continue the sentence" situations), given that they specifically bear a personal meaning for the child;

- the ability to justify their own choices in the overwhelming majority of the children who participated in the study.

Below are the specifics of moral choices made by groups of children aged 6–7 and 7–8 in solving imaginary situations with ethnocultural context:

6–7 years old

- the number of correct type choices is convincingly greater than the number of incorrect type choices;

- the absence of partially positive choices both in situations of moral choice and in situations of the kind "Continue the sentence";

- the ability to make trade-off choices in all situations;

- the number of negative choices in situations of moral choice (where the child is personally engaged) is considerably higher (3 times as high) than the number of such choices made in depersonalized situations of the kind "Continue the sentence";

- the ability to "disguise" negative choices;

- the presence of "declarative" choice in the profile of moral choices;

- declarative statements are made twice as often in depersonalized situations without personal engagement;

- the absence or comparatively low number of partially positive and hesitant moral choices can be attributed to the older

preschoolers' inclination to unambiguity and clarity in answers, the incapability of offering half-way solutions;

- the prevalence of choices with the preference of a nationality which is identical to one's own in situations of preference;

- the considerable number of preferences of a nationality which is identical to one's own (the least valuable in terms of morality) in most cases does not prevent the children from making the right moral choices.

7–8 years old

- the number of correct type choices is convincingly greater than the number of incorrect type choices;

- the ability to make partially positive choices in situations with personal engagement (the situations of moral choice) combined with the inability to do that in depersonalized situations (the situations of the kind "Continue the sentence");

- the ability to make trade-off moral choices, with an increased number of such choices in situations of moral choice;

- the absence of negative choices in depersonalized situations of the kind "Continue the sentence";

- a significant (threefold) excess of the number of disguising choices made in situations of moral choice, compared to the number of such choices in situations of the kind "Continue the sentence"

- the tendency to make less frequent, compared to children aged 6–7, declarative choices in situations of moral choice. Children aged 7–8 more often make declarative choices in depersonalized situations;

- more frequent cases of partially negative choices in situations with the child's personal engagement as compared to the age group of 6–7.

- the prevalence of equal preference in situations of preference;

- the greater number of correct choices vs. incorrect ones correlates with the higher number of the most significant, in terms of morality, preferences of a nationality different from one's own and of equal preference vs. the number of preferences of a nationality identical to one's own.

The theoretical significance of the undertaken study consists in the contribution to the scientific knowledge about age-specific characteristics of moral choices made by children aged 6–7 and 7–8 in imaginary situations.

The practical significance of the study is laid out below.

Situations of moral choice are some-

times avoided in children's moral education programs due to the poor awareness among teachers about the rich diagnostic and pedagogical potential of these situations. The situations with different options to choose from, which are available in various teaching aids and recommended for use by teachers, are scarce. Besides, they do not always describe real-life situations of moral choice. In light of this, the situations of moral choice with ethnocultural context designed in the course of this study can supplement the arsenal of educational tools and methods at kindergartens and preschools.

The dissection of the concept of "choice" into the process of the subject's moral activity and its results helps viewing the pedagogical regulation of moral decision-making in children as the differentiation of the control over the process of choosing and its results. The regulation of the process of choosing consists in the activation, guidance and stimulation of the morally oriented brain activity, support or correction of the particular choice; whereas the regulation of the result of choosing consists in its assessment, reorientation and classification into "good" or "evil." Since moral choice is always a product of freedom and independence, its pedagogical regulation belongs to indirect methods of a teacher's work prior to the act of choice (activation of the moral motivation behind the choice), in the process of choosing (guidance, stimulation and support of the choice) and after the act of choice (assessment, reorientation, classification). The pedagogical regulation of moral choice can be implemented through a differentiated approach to children subdivided into groups in accordance with their most frequently made moral choices. Its function is to deliberately administer complex guiding influence over the moral feelings, moral consciousness and moral behavior of children. Its scope includes focusing the child's attention on the cause and effect of a certain choice; activating the independence in moral decision-making; approving correct moral choices; clarifying the negative component in the partially negative, hesitant and trade-off kinds of moral choices; disapproving negative moral choices; analyzing the negative factor in the partially negative, hesitant, disguising and declarative kinds of moral choices; reorienting the partially negative and disguising kinds of moral choices; "breaking" the declarative nature of statements, etc.

Based on the results of the study it is reasonable to assume that the specifics of moral choices characteristic of children in groups

of age 6–7 and 7–8 dictate a differentiated approach to the pedagogical regulation of this choice.

For example, in situations with the children's personal engagement in age groups of 6–7 where the number of negative choices is the greatest, the highest priority should be given to the focusing of the children's attention on this kind of choice, to the disapproval and reorientation of this choice. The absence of partially positive choices in this age group prompts the teacher to activate thinking processes in children (through comparing alternative actions, analyzing the situations in an attempt to find possible resolutions, etc.). When guiding the solving of depersonalized situations of the kind "Continue the question" in groups of children aged 6–7 who tend to make a significant number of declarative choices, teachers can focus on "breaking" the declarative nature of their statements, etc. Another promising option would be to initiate pedagogical efforts in forming tolerance towards people of different nationalities. This would help improve the results of the related work on pedagogical regulation of moral choices in situations with ethnocultural context.

6. CONCLUSIONS

When solving situations with personal engagement in groups of children aged 7–8 who tend to make three times as many correct choices as incorrect ones, teachers should base their educational work on such methods as the holding of the positive choice as an example, its analysis in terms of morality and the admiration of the child's correct choice. When solving depersonalized situations of the kind "Continue the sentence" in groups of children aged 7–8 who typically avoid negative and partially negative choices, it makes sense to shift the educational focus towards analyzing the negative factors in disguising and declarative kinds of moral choices, reorienting disguising choices, "breaking" declarative choices, etc.

The question remains whether there is any dependency of the results of children's moral decision-making on the ethnocultural aspects determining the context of the situations of moral choice. For this reason, it would be reasonable to do future research on comparing the results of the moral decisions made by children aged 6–7 and 7–8 in situations of moral choice with the integrated moral and ethnocultural context, with the results of deci-

sions made in situations that lack such context. Further research can also be conducted in the field of studying and differentiating the motives of moral choices in situations with ethnocultural context in children aged 6–7 and 7–8.

Thus, the differentiation of children's moral choice by types and kinds can accordingly help build the differentiated educational process in groups of children aged 6–7 and 7–8. The results of the study highlight the opportunities to account for the specifics of moral choices in moral education, as well as to supplement both the diagnostic and, in fact, the educational components of this process.

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Conflict of interests

The authors declare no conflict of interest.

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CONCURRENT VALIDITY OF THE STUDENT TEACHER PROFESSIONAL IDENTITY SCALE

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ABSTRACT

The main purpose of study was to examine concurrent validity of the Student Teachers Professional Identity Scale-STPIS (Fisherman and Abbot, 1998) that was for the first time used in Serbia. Indicators of concurrent validity was established by correlation with student teacher self-reported well-being, self-esteem, burnout stress and resilience. Based on the results we can conclude that the STPIS meets the criterion of concurrent validity. The implications of these results are important for researchers and decisions makers in teacher education

Keywords:

*student teacher,
professional identity,
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1. INTRODUCTION

Teacher educators have been challenged “to recreate the space for construction of an individual, meaningful, resilient professional identity underpinned by strong beliefs and values” (Smethem, 2007:478). Understanding early pre-service teachers’ emerging identity may enable teacher educators to prepare pre-service teachers for their teaching career, through facilitating the development of a professional identity as teachers, and eventually the development of effective teachers who thrive in the profession.

The professional identity of future teachers was investigated as a research variable most frequently as a control variable in teacher identity research (Volkmann and Anderson, 1998; Wagnild and Young, 1993; Pillen, 2013; Fisherman and Abbot, 1998; Fisherman and Weiss, 2008; Živković, 2012). Mainly satisfactory and good values of indicators of con-

current and predictive validity were obtained (Fisherman and Abbot, 1998; Fisherman and Weiss, 2008). Concurrent validity was tested based on the obtained correlation values of score on student teacher professional identity scale and ego-identity, self-regulated learning and meta-cognitive awareness ($p<0.01$).

In present study, concurrent validity is understood as a criterion-related validity. This form of validity endeavours to relate the results of one particular instrument to another external criterion. To demonstrate concurrent validity “[...] the data gathered from using one instrument must correlate highly with data gathered from using another instrument” (Cohen, Manion and Morrison, 2007:140). Concrence can be demonstrated simultaneously with another instrument.

2. MATERIALS AND METHODS

The main problem of this research is to examine concurrent validity of the STPIS (Student Teachers Professional Identity Scale) (Fisherman and Abbot, 1998) that was for the first time used in Serbia.

The initial sample of respondents consisted of 158 students from University of Kragujevac, Faculty of Education in Jagodina. The sample comprised of 54.1% of the 2nd year teacher program students and 45.9% of those who were the 3rd year and master undergradu-

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ated teacher program group. The study group consisted of 158 participants (131 (83%) women and 17 (17%) men ($M=1.83$; $SD=.375$), 50 (32%) post-graduated and 108 (68%) under-graduated students ($M=1.06$; $SD=.206$). Test distribution for academic achievements is normal (Kolmogorov-Smirnov $Z=1.999$, $p=0.001$, $M=2.46$, $SD=.706$).

The following instruments were used in the research:

1. Student Teacher Professional Identity Scale ([Fisherman and Abbot, 1998](#))(STPIS).
2. Rosenberg Self-Esteem Scale (RSES) ([Rosenberg, 1965](#); [Todorović, 2005](#)).
3. Maslach Teachers Burnout Inventory-Educators Survey (MBI-ES) ([Maslach et al., 1996](#)).
4. Warwick-Edinburgh Mental Well-being Scale (WEMWBS) ([Tennant et al., 2007](#)).
5. Cheung Teacher Professional Identity Scale ([Wagnild and Young, 1993](#)).
6. Resilience Scale –RS14 ([Wagnild and Young, 1993](#)).

The survey was conducted anonymously and voluntarily in Faculty of Education in Jagodina. The data collection was conducted anonymously to protect confidentiality of the participants. The translation of the RS from English into Serbian was accomplished by a professional translator. The aim of the translation was not to achieve literal or syntactic equivalence, but to maintain the original denotation and connotation of items.

Cronbach's alpha coefficient, the test-retest correlation coefficient, and the correlations between the RS and other measures were established by calculating Pearson's correlation coefficients. All statistical analyses used two-tailed tests. For all statistical evaluations, p values less than 0.05 were considered indicative of significant differences.

The statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS) for Windows, version 17.0. For statistical analysis, p -values lower than .05 were considered statistically significant. The correlations between STPIS and self-reported burnout stress, self-esteem, well-being, resilience and in-service teacher professional identity were calculated using Pearson's correlation analysis.

3. RESULTS

The calculated mean score for STPIS was $M=49.19$ ($SD=9.47$). The overall Cron-

bach's alpha coefficient of the STPIS was $\alpha=0.935$, indicate good reliability. In the item-statistics analysis, in Cronbachs Alpha if items deleted section, there were no items that had value above obtained $\alpha=.935$. KMO (.889) and Bartletts test of sphericity ($p=0.000$) have satisfactory values. Kolmogorov-Smirnov test of normality $Z=1.264$ ($p=.082$). The test-retest correlation coefficient of the STPIS was 0.83, and that of the STPIS-6 was 0.84.

Student Teacher Professional Identity Scale ([Fisherman and Abbot, 1998](#))(STPIS). This questionnaire examines students' attitudes towards being a teacher and to how much they identify with teacher's role. The questionnaire examines their confidence about their professional choice, their sense of self-actualization as teachers, and the extent to which they see their profession as a mission and as a challenge. The questionnaire consists of 12 items. The teachers were asked to what extent they agreed with the items on a five-point scale (ranging from 1: complete disagreement, to 5: complete agreement). The total scores ranged from 5 to 60 points. Alpha reliability coefficient in previous study was $\alpha=.93$ ([Fisherman & Abbot, 1998](#)), and in repeated measuring was $\alpha=.84$ ([Fisherman and Weiss, 2008](#)).

Rosenberg Self-Esteem Scale (RSES) ([Rosenberg, 1965](#); [Todorović, 2005](#)). The RSES assesses the overall sense of being capable, feeling worthwhile, and competence. Internal consistency and factor validity of the Serbian version of the RSES was shown to be high ([Todorović, 2005](#)). It consists of 10 items, and the degree of self-esteem for each item is rated on a 7-point Likert scale (range, 10-77). Present study internal reliability by Cronbachs alpha coefficient $\alpha=0.78$.

Maslach Teachers Burnout Inventory-Educators Survey (MBI-ES) ([Maslach et al., 1996](#)). This scale consists of 22 items. Generally speaking, on our sample of teachers the instrument shows satisfactory metric characteristics ([Živković and Grozdanović, 2016](#)). Reliability was determined Crombachs alpha coefficient. The internal reliability of the questionnaire is over .60 (Crombachs alpha coefficient $\alpha = .604$, with standardization value of $\alpha = .633$).

Warwick-Edinburgh Mental Well-being Scale (WEMWBS) ([Tennant et al., 2007](#)). The WEMWBS comprises 14 positively phrased items which measure positive affect (such as feelings of optimism, cheerfulness, and relaxation), psychological functioning (for example, energy, clear thinking, self-acceptance,

and competence) and interpersonal relationships. Each item is scored (based on experience over the previous 2 weeks) on a 5-point Likert-style scale from 'none of the time' (1) to 'all of the time' (5). The overall score is the sum of each item score, giving a possible summary score of 14–70; higher scores indicate higher levels of mental well-being (Tennant et al., 2007). Examples of items used in the WEMWBS include: 'I've been dealing with problems well' and 'I've been feeling close to other people'. Calculated Cronbachs Alpha was $\alpha=.83$.

Cheung Teacher Professional Identity Scale (Cheung, 2008). Initial set consisted of 41 items. After determining the psychometric characteristics of the final scale included 18 items (on a 5-point Likert-style scale) that were possessed good psychometric characteristics (Cronbachs Alpha $\alpha=0.83$). In our study (Živković, 2013) the reliability calculated for 18 items reached $\alpha=0.87$.

Resilience Scale –RS14 (Wagnild and Young, 1993). A short version of the RS (RS-14) was developed (Wagnild, 2009) to provide clinicians and researchers a shorter instrument to reduce participant's burden. The internal consistency of the RS-14 has been reported to be excellent ($\alpha = .93$) and it correlates strongly ($r = .97$) with the original RS (Wagnild, 2009). In a present study, calculated Cronbachs Alpha was $\alpha=.84$.

Indicators of concurrent validity of the STPIS-6 are shown in Table 1. STPIS-6 were negatively correlated with the MBS-ES, and positively correlated with the CTPI, RSES and WEMWBS.

Table 1. Indicators of Concurrent Validity: Correlation Matrix

	STPIS	RSES	MBS-ES	WEMWBS	CTPI	RS-14
STPIS	1.000					
RSES	.263*	1.000				
MBS-ES	.295*	.047	1.000			
WEMWBS	.278*	-.161	.135	1.000		
CTPI	.463**	.070	.225*	.144	1.000	
RS-14	-.005	.127	-.185	-.203	-.137	1.000

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Note: STPIS-Student Teacher Professional Identity Scale; RSES-Rosenberg Self-Esteem Scale; MBS-ES-Maslach Burnout Inventory-Educators Survey; WEMWBS-Warwick Edinburgh Mental Well-Being Scale; CTPI-Cheung Teacher Professional Identity Scale; RS-14-Resilience Scale.

4. DISCUSSIONS

Theoretical and empirical analyzes in research dealing with the problem of professional identity of teacher students prove or presuppose possible links of identity with well-being (Kessels, 2010), self-esteem (Joseph and Heading, 2010), burnout stress (Pillen, 2013) and resilience (Pearce and Morrison, 2011; Papatrainou and Le Cornu, 2014). On our sample of respondents and related instruments that measure the mentioned variables, in order to examine the concurrent validity of the student teacher professional identity scale, values of statistically significant correlations of STPIS with well-being ($r=.278$), self-esteem ($r=.263$), burnout stress ($r=.295$) and in-service teacher professional identity ($r=.463$) have been obtained.

The obtained correlation of the resilience and teacher identity is negative and not statistically significant. The obtained negative values of the correlation of resilience and burnout stress (which can be assumed to be significant) indicate the need to examine this relationship in more detail. The obtained high values of the correlation between the in-service teacher professional identity and student teacher professional identity indicate the need to establish and examine latent dimensions in factor and confirmation analysis. All obtained correlation values are expected and are in line with theoretical assumptions, except for the obtained value of the correlation with burnout stress that is supposed to be low and negative (Pillen et al, 2013). Interestingly, a statistically significant correlation of stress with the identity of experienced teachers was obtained ($r=.225$).

5. CONCLUSIONS

Based on the results we can conclude that the student teacher professional identity scale meets the criterion of concurrent validity. Research on the theme of forming a professional teacher identity is relevant to mentors in the training of future teachers in schools, and their goal is to better understand and conceptualize the support and needs of future teachers.

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Conflict of interests

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DEVELOPMENT OF SOCIAL SKILLS AMONG ELEMENTARY SCHOOL CHILDREN

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ABSTRACT

The purpose of the research was to explore the development of social skills among elementary school children and identify similarities and differences based on socio-demographic characteristics. The research was conducted in 2017. This study used a sample of 1639 fifth and eighth-grade students from 17 primary schools in the area of the Central Bosnia Canton. The obtained findings provided significant results. The high level of self-assessment of social competence was determined. The results also showed that there is a statistically significant difference between the respondents in the assessment of social competence with regard to the gender and grade of the students. The correlation between social competence and students' school performance was determined. These findings will have their practical application in teaching process, and help teachers and students in the development of social competence through teaching process.

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1. INTRODUCTION

Today's educational system prepares children for the life in the third decade of the 21st century. It is important to foresee the knowledge that will be necessary for children in the age in which they'll live. Therefore, it is necessary to enable children to master these skills successfully and develop certain skills and abilities.

The school of the future aims to develop the competencies of children. "Competencies are the general abilities of action based on knowledge, experience, values and dispositions which an individual has developed while engaging in educational practice, and they are related to the improvement of one's own qualities and the empowerment that enables a person to be independent, to be able to cope

with problems and to deal with nature and society." (Selimović, 2009, page 424). In order to achieve social development as a social being, a person must be familiar with the norms, rules and values of the society in which s/he lives, as well as to master the skills necessary for him/her to achieve effective interaction within that community. A man who succeeds in this is socially adapted and competent, and so is a child who has succeeded.

The problem of social competence was studied in detail by Blažević (2015); Buljubašić-Kuzmanović, (2008, 2010, 2012); Katz, McClellan (1999); Opić, (2010); Previšić (1999, 2003); Zrilić (2010) and others. Suzić (2005) has dealt with this issue in Bosnia and Herzegovina.

Since social competences are pivotal, it is important to analyze its concept in detail. Meanwhile, it should be noted that it often happens that social competences are considered as social skills, i.e. it seems there is no distinction between these two terms. However, it is necessary to emphasize that there are differences between these two terms. "Skills include the specific behavior of individuals (e.g. tolerance, non-violent conflict resolution, constructive communication), while competence determines how a person uses skills in

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the social environment. We can say that an individual is socially competent if he uses social skills appropriately and successfully achieves key personal goals at the same time" (Markuš, 2010, page 435). According to this interpretation, an individual cannot become socially competent without social skills, or more precisely, without the appropriate use of social skills. Both terms refer to the ability to deal with different social situations (Klarin, 2006).

Social competence includes effective functioning in a social context and consists of the ability and/or groups of abilities that make it easier to start, develop and maintain relationships with people (Brdar, 1993). Brust Nemet (2015) states that social competence is the ability to create and align flexible, customized responses to requests, and create and exploit opportunities in the environment.

In the process of competence development, all educational factors should be involved: a family, the social environment in which the individual lives, the attendance in preschool and school institutions, friends with whom s/he gets together, children's organizations that organize extracurricular activities and psycho-physical condition of the individual. Katz and McClellan (1997) emphasize the role of the environment in creating the context of social development. Family, school, and peer groups have the most impact on social development. Peer interaction is a prerequisite for encouraging social competencies that leads to an individual's satisfaction. If these relationships are positive and fulfilled with satisfaction, they maintain positive behavior and motivate students to work. "Students who have more developed interaction pattern and eager to engage in peer cooperation, make better adaptation and achieve better learning outcomes rather than students who avoid social interactions within and out of classroom" (Bulibašić-Kuzmanović, 2010, page 193). Thus, peer interaction contributes to the better achievement of students. Besides, peer interaction also contributes to meeting individual's needs. According to the Maslow's hierarchy of needs, it is clear that the students' need for love is met simply through socializing with other children. It is the same case with the need for respect. "The individual's need for others to show respect for him and to be appreciated by them is of great importance since respect received from others internalizes, contributes to self-esteem and a good relationship with oneself and others" (ibid., page 193).

To what extent the students will de-

velop their social competences through peer interaction depends on themselves. Their behavior, or the models of the behavior they have developed substantially determines the success in social interaction. Likewise, the emotional and social life of children is an essential prerequisite for the development of social competence. In order to develop these competencies, the elements that are related to social knowledge and understanding are required, and it is these elements that can only be learned through interaction with others by creating an experience. However, it happens that children do not always maintain effective communication with other children, in other words, they have challenges in interaction. Such children whose behavior is not accepted in the group are rejected and they must seek for new adaptation models. For this reason, older children tend to look for smaller groups of children with similar preferences in order to establish those relationships and to feel equal with other children.

Social competence and its development through the educational system constitute "a new approach to upbringing" (Goleman, 1997). This approach contains a series of abilities that belong to empathy, expression and understanding of one's own feelings, ability to solve problems in cooperation with others, even friendship, kindness and respect that need to be learned through social interaction. Due to all this, the role of peers in the development of social competence is significant for every individual, because it ultimately allows each individual to develop their sense of belonging, to be accepted and to thus be respected by others and show respect for others. All this makes an individual a member of a particular community.

There is a number of strategies that can strengthen social competence. Katz and McClellan (1999) list the following strategies: open communication with parents, respect for children's feelings, establishment of authority and trust, positive labeling of children's character, respect for individual differences, invoking fundamental rules, enhancing prosocial skills, addressing children's common sense and helping children overcome adversity.

These strategies for strengthening social competence can be successfully used by teachers and parents. The role of schools and teachers themselves in the implementation of developmental strategies of social competence is multiple and irreplaceable. For this very reason, the first objective of this research is to examine the level of development of so-

cial competence among elementary school students.

The second aim is to determine the differences between the respondents with regard to the gender and grade of the students.

The third objective is to determine the correlation between the level of development of students' social competence and their school performance.

2. MATERIALS AND METHODS

The research on the development of social competence among students was conducted in May 2017 in the schools of the Central Bosnia Canton. The consent was obtained from the Ministry of Education, as well as from all the principals of the primary schools in which the research was conducted, in order to carry out this research. Before the survey was delivered, the respondents were introduced with the significance of the research and instructed on how to fill out the questionnaire. Each student responded to the questions voluntarily, by circling the answers which s/he deemed to be true. The students gave answers quickly and honestly, and the respondent who had troubles in understanding the items were provided additional explanations. The survey was conducted in such way that the appropriate pace of the research was assured without any ambiguity. The survey was conducted during one school class.

The study population consisted of 14732 students from 5th and 8th grades of elementary schools in the Central Bosnia Canton. 1639 students participated in the survey, which is 11,13% of the total study population.

In this study, there were 802 (49%) female students and 837 (51%) male students. The total population of female is 7066 (48%) and 7666 (52%) is male students in the Central Bosnia Canton.

This study included 846 (52%) students from the fifth grade and 793 (48%) students from the eighth grade.

All the above data in regards to the sample indicate the uniformity of the sample and the fact that the sample is representative.

The instrument that was used in the study was the Student's Social Competence Questionnaire which consist of 24 items. The first part of the instrument consists of sociodemographic data on pupils who participated in the research. Data refer to gender, grade, and school performance. Besides, this part of the study includes a brief explanation of the pur-

pose of the instrument, the problem of the study that is being investigated and the way of responding to the items.

The second part of the questionnaire refers to the scale items. The Likert's five-point scale was used in order to obtain participant's preferences or degree of agreement, (1 - *never*, 2 - *rarely*, 3 - *occasionally*, 4 - *regularly*, 5 - *always*).

3. RESULTS

The first objective of this research was to examine the level of students' self-assessment of their social competence development. The descriptive analysis of each variable was used to determine the mean value and the standard deviation.

According to the results shown in Table 1, the mean value of the observed variables ranges from $M=2.49$ for the item "I would not like to be the only one in the class who has all A's and knows everything." up to $M=4.69$ for the item "*I am proud of being a member of my nation, but I also respect the members of other nationalities.*". Based on a detailed analysis of the results, it can be concluded that the respondents rated 19 out of 24 variables (mode ≥ 4) related to social competence.

Table 1. Arithmetic mean and standard deviation for 24 items of social competences

Items	Mean	Std. Deviation
1. I can understand the "strange" behavior of other students when they have some problems.	3.60	1.090
2. When a problem occurs in a group in which I socialize, I want to help.	4.20	1.089
3. I can explain my own behavior and behavior of others in conversation with friends.	3.36	1.161
4. When I am planning an activity or set goals with my peers, I try to respect their opinions.	3.99	1.202
5. When someone presents the facts and convinces me that I'm wrong, I change my mind.	3.15	1.412
6. I like to work and study in a group.	3.43	1.539
7. I try to make all the members of the group active and satisfied when I am chosen as the leader of a group	4.31	1.134
8. When I am the leader, I successfully cooperate with all the members of the group.	4.08	1.133
9. I quickly establish relationships and acquaintances with peers who I did not know before.	4.01	1.107
10. When the leader is another student in the group, I know how to listen, make suggestions and execute decisions of the group.	3.92	1.195
11. When someone is talking, I wait for them to finish, and then say what I think.	3.78	1.321
12. I always listen carefully to the person I'm speaking with.	3.92	1.145
13. I always speak openly and have eye contact with my interlocutors.	3.87	1.193
14. If people are not listening to what I am saying, I draw their attention without raising my voice.	2.89	1.386
15. I would not like to be the only one in the class who has all A's and knows everything.	2.49	1.649
16. I like when people around me succeed, I like to be in a company of successful people	4.36	1.046
17. When some of my peers achieve something very successful, my parents, people around me, and I feel good.	4.08	1.138
18. I like to help students with homework or tests.	3.75	1.350
19. I like to socialize with children of different nationalities. I can socialize with black folks and members from other nations.	4.03 4.28	1.269 1.147
20. Some of my friends have some personality traits which I don't like, but they are dear to me and I respect them.	4.11	1.019
21. I am proud of being a member of my nation, but I also respect the members of other nationalities.	4.69	0.802
22. I feel sorry when children beg. I always give them a coin if I have it.	4.27	1.010
23. I feel that I belong to the society in which I live because it nurtures different cultures and customs.	4.26	1.098

Confirmation of the above results is also found in the summary results for the entire instrument of *social competence* Table 2.

Cronbach's alpha coefficient of 0.81 indicates the high reliability and internal agreement of the scale for this sample of respondents.

The arithmetic mean of all items is $M=3.81$. It shows that the assessment of students on the development of their social competence was above average. This was confirmed by the results of the One-Sample t-Test which indicated that the respondents positively assess their social competence

$(t=63.74; df=1638; p=0.000; meandiff=0.81, test value=3)$.

The standard deviation value of 0.51 indicated that the dispersion around the arithmetic mean was small, which was also confirmed by the coefficient of variability of 13.39%, and thus the results were homogeneous.

The skewness value of -0.743 indicated that the results are slightly negatively asymmetric. Therefore, the results were oriented towards higher values, in another words positive assessment, in accordance with the direction of the scale.

The kurtosis value of 1,660 suggested

that it is a leptokurtic distribution, id est. small dispersion of results around the arithmetic means (according to values of the coefficient of variability). Although the value of the K-S test indicated a deviation of the normal dis-

tribution ($K-S = 0.045$; $df = 1639$; $p = 0.000$), it was accessed in the area of inferential statistics by parametric statistical tests due to its large sample, unimodal distribution, moderate dispersion, slight asymmetry and kurtosis.

Table 2. Descriptive statistics (sum of social competences)

Claims	N	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of Difference		Skewness	Kurtosis
					Lower	Upper		
Social competence	1639	3,81	0,51	0,013	3,78	3,83	-0,743	1,660

In order to reduce the 24 manifest variables that the Social Competence Instrument consist of, we conducted an exploratory factor analysis (method: principal component analysis). The goal was to determine clusters that form latent dimensions (collinearity) using the principle of intercorrelation of manifold variables,

The aim was to summarize the manifest of the collinearity variables on the latent dimensions on the principle of parsimony, that is, the main components that are composed of clusters of interrelated sets of variables (main components).

The Kaiser-Meyer-Olkin correlation value of 0.886 showed that there is a large correlation between the particles and linear dependence among the scattering particles. KMO is based on the ratio of the sum of the partial and observed correlations in the matrix. The specified value indicated that the matrix was suitable for carrying out a factor analysis. Bartlett's test of sphericity ($6776,634$ $p < 0.05$) showed a statistical significance, which implied that the matrix of correlations statistically significantly differs from the identity matrix, which allows the extraction of factors or the continuation of the implementation of factor analysis.

The Guttman-Kaiser criterion was used as a model for stopping the extraction of the main components. Incipiently, six major components were found with 47.66% of the variance. Since the GK criterion leads to hyper factorization, Cattell's scree plot was applied. We extracted the components on the steep slope of the graph where there is a sharp drop in the plot.

This can also be the case when there is a small number of main components that are above the limit value of 1, which is a rare case in the research of education (pedagogy) (Opić, 2012).

From the Cattell's scree plot, we could take 3 (or 2 because it's a better solution to

decrease the number of main components on the scree plotted by 1). Since we obtained opposite results on the number of main components because the mentioned criteria for stopping the extraction showed different values, we decided to use a Monte Carlo simulation, a robust version based on permutations of raw data. (Figure 1). The five main components are optima in Figure 1.

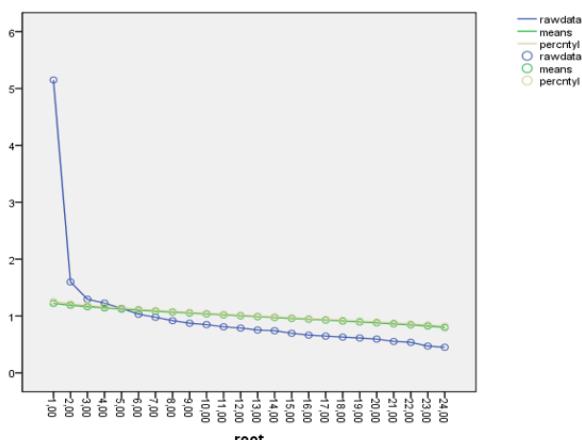


Figure 1. Scree Plot of Social Competence

Findings in Table 3 showed a set of manifest indicators of 24 variables of social competences are reduced to "five latent dimensions" (21,461; 6,664; 5,391; 5,111; 4,731).

Table 3. Characteristic Roots (LAMBDA) matrix of inter-correlation of social competence

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% Variance	Cumulative %
1	5,151	21,461	21,461	5,151	21,461	21,461
2	1,599	6,664	28,125	1,599	6,664	28,125
3	1,294	5,391	33,516	1,294	5,391	33,516
4	1,227	5,111	38,627	1,227	5,111	38,627
5	1,136	4,731	43,359	1,136	4,731	43,359

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

In order to determine the realistic structure of the latent dimensions of social competence, according to the assessment of elementary school students, the rotation of the main components was performed and five interpretive main components were obtained: *Consistency with the goals of the group and relation-*

ships in the group, Respect for diversity and tolerance towards others, Collaboration and sensibility for others, Effective communication and understanding of other individuals, and Supporting others and the sense of positive affiliation (Table 4).

Table 4. Pattern matrix

Variables	F1	F2	F3	F4	F5
7. I try to make all the members of the group active and satisfied when I am chosen as the leader of a group.	0,83				
8. When I am the leader, I successfully cooperate with all the members of the group.	0,74				
4. When I am planning an activity or set goals with my peers, I try to respect their opinions.	0,65				
10. When the leader is another student in the group, I know how to listen, make suggestions and execute decisions of the group.	0,59				
12. I always listen carefully to the person I'm speaking with.	0,50	0,43			
13. I always speak openly and have eye contact with my interlocutors.					
19. I like to socialize with children of different nationalities.	0,81				
20. I can socialize with black folks and members from other nations.	0,80				
15. I would not like to be the only one in the class who has all A's and knows everything.	0,59				
3. I can explain my own behavior and behavior of others in conversation with friends.	0,54				
5. When someone presents the facts and convinces me that I'm wrong, I change my mind.	0,48				
14. If people are not listening to what I am saying, I draw their attention without raising my voice.	0,54				
1. I can understand the "strange" behavior of other students when they have some problems.	-0,54				
11. When someone is talking, I wait for them to finish, and then say what I think	0,50				
23. I feel sorry when children beg. I always give them a coin if I have it.	0,68				
24. I feel that I belong to the society in which I live because it nurtures different cultures and customs.	0,67				
17. When some of my peers achieve something very successful, my parents, people around me, and I feel good.	0,65				
16. I like when people around me succeed, I like to be in a company of successful people.	0,43				
22. I am proud of being a member of my nation, but I also respect the members of other nationalities.	0,37	0,41			
2. When a problem occurs in a group in which I socialize, I want to help.		0,38			
18. I like to help students with homework or tests.					
9. I quickly establish relationships and acquaintances with peers who I did not know before.					
6. I like to work and study in a group.					
21. Some of my friends have some personality traits which I don't like, but they are dear to me and I respect them.					

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 21 iterations.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0.830
 Bartlett's Test of Sphericity = 1075.037 Sig. 0.00

The obtained factor structure was satisfactory, although some variables had double-factor solutions (v12, v22). Saturation of two variables two factors were evident. Although no pure Thurston structure was obtained, the conducted rotation with iterations showed the best factor structure of the latent space of the observed variables (criterion of factor loading is 0.37).

The obtained factors represent subscales for which a descriptive statistical analysis is presented. Descriptive analysis of each sub-scale was used to determine mean values and standard deviations (table 5).

According to the results shown in Table 5, the mean values of the sub-scales range from $M=3.00$ for the third subscale "Collaboration and sensitivity for others", up to the mean value $M=4.33$ for the subscale "Respect for diversity and tolerance towards others".

The first subscale - *Consistency with the goals of the group and relationships in the group*, refers to the students' assessment of how they behave when they are leaders and when they follow the leader in a group in regards to activities and cooperation in the group, listening carefully and appreciating the opinion of others in the group.

The second subscale - *Respect for diversity and tolerance towards others*, refers to communication and socializing with others and those who are different from us, as well as respecting interlocutors in communication.

Collaboration and sensibility for others is a subscale that refers to sensitivity towards classmates and accepting the opinions of others when there are arguments and explanations for their behaviors.

The fourth subscale - *Effective communication and understanding of others* refers to focusing on the scope of communication in appropriate manner, understanding the problems and behavior of others, as well as respecting interlocutors.

Supporting others and the sense of positive affiliation refers to helping others when they are in need, a sense of belonging to the environment in which one lives with all the diversities, helping and respecting others and their differences appreciating their achievements, as well as being proud of who you are and where you belong to.

Based on a detailed analysis of the results, it can be concluded that the respondents rated 3 out of 5 subscales (mode ≥ 4) related to social competences.

Table 5. Arithmetic mean and standard deviation for five subscales of social competence

Items	Mean	Std. Deviation
1. Consistency with the goals of the group and relationships in the group	4.05	0.804
2. Respect for diversity and tolerance towards others	4.33	0.808
3. Collaboration and sensibility for others	3.00	0.891
4. Effective communication and understanding of others	3.42	0.809
5. Supporting others and the sense of positive affiliation	4.23	0.684

The second aim is to determine the differences between the respondents with regard to the gender and grade of the students. There is a statistically significant difference of arithmetic means between boys and girls within the subclasses: *Consistency with the goals of the group and relationships in the group* ($t=-8,899$; $p=0,00$); where the value for male students is $M=3,88$ and $M=4,22$ for female students. The Mean values for the subscale *Effective communication and understanding of other individuals* is $M=3,29$ for the male students and $M=3,57$ for the female students ($t=-7,067$; $p=0,00$).

A statistically significant difference is evident in the subscale of *Supporting others and the sense of positive affiliation* where the mean value is $M=4,13$ the male students and $M=4,34$ for the female students with the value

($t=-6,242$; $p=0,00$). This result showed that there is a statistically significant difference between the male and female students' assessment of social competence. In another words, the female students assessed the development of social competence more positively. The female students have a statistically significant higher assessment of 4 out of 5 subscales of social competence (on the scale Collaboration and sensibility for other individuals the male students indicated higher level of social competence than the female students).

Table 6. Differences in assessments of the development of social competence with regard to the gender of students

Subscales factors	Gender	N	Mean	Std. Deviat.	Mean Differe.	df	t	Sig.	
1. Consistency with the goals of the group and relationships in the group	M	837	3,88	0,89	-0,34	1549	-8,899	0,00	
	F	802	4,22	0,66					
2. Respect for diversity and tolerance towards others	M	837	4,28	0,84	-0,11	1632	-2,838	0,01	
	F	802	4,39	0,76					
3. Collaboration and sensibility for others	M	837	3,05	0,92	0,10	1637	2,316	0,02	
	F	802	2,95	0,86					
4. Effective communication and understanding of others	M	837	3,29	0,85	-0,28	1619	-7,067	0,00	
	F	802	3,57	0,73					
5. Supporting others and the sense of positive affiliation	M	837	4,13	0,73	-0,21	1611	-6,242	0,00	
	F	802	4,34	0,59					
Social competence Sum		M	837	3,73	0,55	-0,16		1604	
		F	802	3,89	0,46	-6,744		0,00	

The results of *social competence* in regards to the grade that the students are attending, showed that there is a statistically significant difference in arithmetic means at the level ($p < 0.00$) between the students of the fifth and eighth grade of elementary school, since the value ($t = -6.744$; $p = 0,00$) Table 7. Fifth-grade students indicated the development of social competence with higher values, compared to the eighth-grade students. In three subscales at the level ($p < 0.05$) a statistically significant difference was observed. By comparing arithmetic means, it can be concluded that the students of lower grades more positively assessed the development of social competence compared to the students of the eighth grade in the

subclass of *Consistency with the goals of the group*, the value of the arithmetic mean among the students of the fifth grade was $M=4.20$ and $M=3.89$ for the 8th grade students.

Another positive assessment of students of the fifth grade is also found in *Supporting others and the sense of positive affiliation* ($M = 4.47$; $M = 3.98$) as well as for the subclass - *Collaboration and sensibility for others* where ($M = 3.05$; $M = 2.94$) in favor of the fifth-grade students.

Student's assessment for the subscales *Respect for diversity and tolerance towards others* and *Effective communication and understanding of others* did not provide statistically significant differences.

Table 7. Differences in assessments of the development of social competence with regard to the students' grade

Subscales factors	Grade	N	Mean	Std. Devia.	Mean Differe.	df	t	Sig.
1. Consistency with the goals of the group and relationships in the group	V	846	4,20	0,75	0,31	1594	7,905	0,00
	VIII	793	3,89	0,83				
2. Respect for diversity and tolerance towards others	V	846	4,36	0,79	0,05	1637	1,232	0,22
	VIII	793	4,31	0,03				
3. Collaboration and sensibility for others	V	846	3,05	0,93	0,11	1636	2,716	0,01
	VIII	793	2,94	0,85				
4. Effective communication and understanding of others	V	846	3,46	0,84	0,07	1637	1,733	0,08
	VIII	793	3,39	0,77				
5. Supporting others and the sense of positive affiliation	V	846	4,47	0,60	0,49	1637	15,795	0,00
	VIII	793	3,98	0,67				
Social competence Sum	V	846	3,91	0,50	0,21	1637	8,428	0,00
	VIII	793	3,70	0,50				

The third objective was to determine the *correlation between the level of development of students' social competence and their school performance*. The results are presented in Table 8.

In order to measure the correlation, the Pearson's correlation coefficient was used.

Based on the results presented in Table 8, it can be concluded that there is a statistically significant low positive correlation ($r = 0.22^{**}$; $p < 0.01$) between students' school performance and the development of social competence.

Table 8. Correlation (Pearson) between social competence and students' school performance

Variables	Core.	1	2	3	4	5	6	7
1. Performance	r	0,23**	0,13**	0,08**	0,10**	0,17**	0,22**	
2. Consistency with the goals of the group and relationships in the group	r		0,25**	0,17**	0,48**	0,52**	0,74**	
3. Respect for diversity and tolerance towards others	r			0,12**	0,17**	0,30**	0,57**	
4. Collaboration and sensibility for others	r				0,23**	0,13**	0,55**	
5. Effective communication and understanding of others	r					0,35**	0,69**	
6. Supporting others and the sense of positive affiliation	r						0,67**	
7. Social competence total	r							

Note: ** level of significance $p < 0.01$ * level of significance $p < 0.05$

1. Performance 2. Consistency with the goals of the group and relationships in the group 3. Respect for diversity and tolerance towards others 4. Collaboration and sensibility for others 5. Effective communication and understanding of others 6. Supporting others and the sense of positive affiliation 7. Social competence - total

A statistically significant and positive correlation exists between students' school performance and all five factors that were treated as subscales: *Consistency with the*

goals of the group and relationships in the group ($r=0,23^{**}$), *Respect for diversity and tolerance towards others* ($r=0,13^{**}$); *Collaboration and sensibility for others* ($r=0,08^{**}$);

Effective communication and understanding of others ($r=0,10^{**}$); Supporting others and a sense of positive affiliation ($r=0,17^{**}$).

A statistically significant and positive correlation also exists between all factors, as well as between the factors and the overall subscale of development of social competence.

Although statistically significant correlations were observed, caution should be used while making generalizations. In other words, the size of the sample can affect statistical differences or correlation and refer to the potential increase in Type I error. Thus, observed correlations can be considered as indications rather than generalization.

4. DISCUSSION

The research aimed to examine the development of social competence among students and the impact of various socio-demographic indicators on this development. The development of social competence is above average ($M=3,82$) and ($t=63.74$; $df=1638$; $p=0.000$; mean diff=0.81, test value=3), which indicates that the level of students' self-assessment is high.

The results also indicated negative asymmetry, and thus the positive assessments of the development of social competence is evident.

The kurtosis values indicated elongation curve, so the results were grouped around the arithmetic mean. In other words, the arithmetic mean was well represented by the data, the results were correctly distributed and represented a reflection of the situation in the population.

The development of social competence was observed among students of elementary schools. Hence, the results obtained were a result of the influence of the teaching process that can be considered as successful. The results of this survey were consistent with previous research. [Fabra-Brell and Romero-Naranjo \(2017\)](#), in an experimental study on a sample of second-grade secondary school students, showed that social competencies methods can be improved through BAPNE.

The findings of this research confirmed the results of the research conducted by [Jašarević, Jašarević, Hadžić \(2016\)](#) since the value of the arithmetic mean of all indicators of social competence was very high ($M=3.94$).

[Ključević \(2008\)](#), using the experimental treatment while having a workshop with

students promoted the development of students' social competence through the development of self-confidence, encouraging students to accept and show respect for diversity, developing openness for cooperation, teaching students about nonviolent conflict resolution, developing and encouraging the empathy. The analyzed results of the research indicated that "social competence includes empathy, communication skills, tolerance, co-operation and mutual assistance, responsibility towards oneself and others, determination in performing tasks, delaying satisfaction, controlling violent behavior, expressing feelings of value, uniqueness and positive image of oneself ([Mlinarević-Tomas, 2010, page 144](#)).

"Since social interactions involve a series of social skills, socially competent children align their behavior with others by finding a common language, exchanging information and examining similarities and differences according to acquired prosocial skills" ([Brajša-Žganec, 2003, page 25](#)).

Therefore, social competence can be encouraged using various approaches through a curriculum reform that will precisely define ways to do so. "An effective approach to design a teaching curriculum that promotes the development of students' social competence requires that a teacher constantly stimulates and shapes his/her own social competencies in order to effectively apply them in the teaching process and initiate activities for social development (education for community life, education for non-violence). A teacher's competencies need to effectively promote the structure of the content of social education in an appropriate form ([Jurčić, 2010, page 2007](#)).

Teacher's social competence in the educational process, that are enriched with advice, dialogue, coordination, guidance, motivation and guidance of students, significantly influences a student's orientation towards the development of individual opportunities, abilities, independence of acting using knowledge and behavior appropriate for cultural and social beings ([Previšić, 1999](#)).

The motivation of students is important for the development of social competence. The influence of motivation was examined by [Magelinskaitė et al. \(2014\)](#), who found a positive correlation between social competence and student motivation.

However, [Babić, Čikeš and Buško \(2015\)](#) warn that the results obtained during the assessment of socio-emotional competence can be the result of upbringing and cultural influences and not the actual representa-

tion of the socio-emotional competence of the respondents. Therefore, it is important to emphasize that "The results of the research show that encouraging the development of social competence in schools positively influences numerous areas of student behavior and experience - decreases the incidence of unintended and risky behaviors, significantly improves the quality of relationships with peers and adults, besides a positive correlation between academic achievement and cognitive competence was observed" (Markuš, 2010, page 442). Of course, all these remarks should be taken into account while making conclusion on the development of social competence.

The differences between respondents in the assessment of social competence has been significant in regards to the socio-demographic characteristics.

It is evident in this study as well. The significant differences in regards to the gender of the students were found for all subscales, as well as for the social competence as a whole. Female students have assessed more positively *Consistency with the goals of the group and relationships in the group; Respect for diversity and tolerance towards others; Effective communication and understanding of others; Supporting others and the sense of positive affiliation*. Meanwhile, male students on the other hand, positively assessed only *Collaboration and sensibility for others*. These findings point to a different assessment of social competence in which female students perceive the segment of personality development more positively than male students.

The findings of some other studies confirm the results of our research. Dražić (2016), Magelinskaitė et al. (2014), stated that female students indicated a higher level of development of socio-emotional competence.

Research conducted by Jašarević, Jašarević, Hadžić (2016) completely validate the results of our research, as they observed that female students have more developed social competence. According to Denham et al. (2010); according to Brajša Žganec and Hanžec, (2015) boys face more challenges in social adjustment and tend to show inappropriate behavior in social interactions to a greater extent than girls, which leads to the conclusion that girls have a higher level of development of social competences.

The findings by Tatalović-Vorkapić and Lončarić (2014) also indicate the fact that girls have more developed social skills, self-control, enjoyment of research and emotional stability.

The confirmation of the differences between boys and girls is also found in the results of the research conducted by Šipek (2016), Dražić (2016). They have concluded, using a sample of first and second-grade students, that girls have better developed social skills. The results of the Brajša-Žganec and Slunjski (2007) study revealed that women in their young and adult age behave prosocially compared to men. Confirmation of differences in social skills with regard to gender is also found in the research conducted by Buljubašić Kuzmanović and Botić (2012). They concluded that girls assess their social skills more positively than boys. However, Vinaj (2014) using a sample of second, third and fourth-year high school students found that there was no statistically significant difference between the respondents regarding gender in the development of social skills. Ali, Singh, Smekal (2011) concluded the same. They confirmed that there was no difference between the boys and girls sample of 300 adolescents. All of the above results indicate that there are differences between boys and girls in regards to the development of social competences, but those differences disappear when students get older.

The results of *social competence in this study in regards* to the grade that the students are attending, show that there is a statistically significant difference between students of the *fifth and eighth grade* of elementary school. The fifth-grade students assessed the development of social competence with higher values compared to the eighth-grade students. These findings indicate that teachers pay more attention to co-operation with students and helping them when needed outside the classroom, however this cooperation lacks in the classroom. The result of this study suggests that teachers should find ways to communicate with students in order to help students and to establish a better co-operation that will promote social competence. Research conducted by Šipek (2016) reported that the eight-year-old students have more developed social skills compared to the seven-year-old students.

The findings of Dražić's (2016) research demonstrated that students of higher grades of elementary school achieve better results on twenty out of twenty-two variables. In other words, they showed a higher level of socio-emotional competence.

In this research, we also explored the connection between social competence and students' school performance. The results showed that there is a correlation between students' school performance and social com-

petence. This means that better performance develops the quality of social competence. In other words, children with more advanced social competences also perform better in school. Studies by [Elias, Haynes, \(2008\)](#) and [Magelinskaite \(2011\)](#) also confirmed the positive relationship between social competences and school performance.

[Buljubašić Kuzmanović, Botić's \(2012\)](#) findings confirm the results of our research. Namely, based on a study of students of the fifth and seventh grade, they showed that students with better academic achievement have better developed social skills.

The influence of school performance on the development of social skills was also examined by [Vinaj \(2014\)](#), and she came to the conclusion that the effect of school performance on social skills as well as on responsibility and competence proved to be significant. Furthermore, the post hoc analysis showed that a statistically significant difference occurred between a group of straight-A student and their B-average counterparts. The results indicated that straight-A students have more developed social skills than B-average counterparts. Research conducted by [Pečjak, Levpušček, Valenčić Zuljan, Kalin, Peklaj \(2009\)](#) also confirms the difference in the development of social skills with regard to school performance. All these studies imply a correlation between school performance and social competence, which confirms the fact that better students are also socially competent.

5. CONCLUSION

The purpose of the research was to explore the development of social skills based on gender and grade of the students and to investigate the correlation between social competence and students' school performance.

The research was conducted among the students of the fifth and the eighth grade, and based on the analysis of the results we reached the following conclusions:

We examined the assessment of social competences through 24 items. The results showed that the students indicated a high assessment on the development of social competence.

The results of the *development of social competence in regards to gender and grade* that the students are attending, showed that there is a statistically significant difference between the respondent groups.

Based on Pearson's correlation coeffi-

cient it can be concluded that there is a statistically significant correlation between students' school performance and the development of social competence. Based on the analysis of the results, it can be concluded that the research objectives have been fulfilled.

It is evident, as confirmed by the results of our research that social competence is an important social phenomenon, significant in the life of every individual. The development and usage of social competences should not be underestimated for the purpose of personal progress, development and self-assertion. The task of the school and the management of the school is to raise teacher's education to a higher level, to provide permanent professional development for teachers, to enable them to work with students in order to develop socio-emotional competence. The goal which we aim to achieve is to prepare students for quality and creative communication and interaction in the social environment. The development of social competence can be achieved in different ways, through interactive learning, cooperative learning, through extracurricular activities, various ecological activities, etc.

This study has several limitations. The first limitation is the fact that the development of social competences was determined by the self-assessment of respondents through transversal research. Additionally, research should also be conducted in other Cantons in the Federation of Bosnia and Herzegovina, the Brcko District and the Republika Srpska. In order to eliminate deficiencies in research, longitudinal or experimental research needs to be carried out, and teachers and other factors of the teaching process need to be included as well.

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Conflict of interests

The authors declare no conflict of interest.

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LEARNING PROBLEMS IN CHILDREN WITH MILD INTELLECTUAL DISABILITY

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ABSTRACT

School failure is one of the more complex, more difficult and unfortunately frequent problem that modern school meets. Many factors can cause school failure, such as: child development characteristics, family and school-originated factors. The purpose of the research is analysis of the specific learning problems in students with a mild intellectual disability. For our research we used ACADIA test, which contains 13 subtests for assessing the overall individual functioning. The research involved 144 students. We divided the sample into two groups, children with intellectual disability (our target group) and control group. We found that generally all students with the intellectual disability have special learning problems. According to individual subtests analysis we concluded that the ability for visual association is best developed among these students while on the subtest for auditory memory they achieved worse results. With the analysis of the control group we found that 13.75% of the students have special learning problems.

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1. INTRODUCTION

Schools easily understand the importance for adaptation according to the students' needs once they have visible problems – such as sensory disorders or physical impairments, however, these institutions have less understanding of meeting the needs of students with “less visible (noticeable) disorder”, such as students with mild intellectual disability, as well as students with specific learning problems.

Learning problems range from light, moderate to severe, from short-term to life-long learning disabilities, thus schools have to prepare with various forms of assistance offered to every child with learning difficulties. Children with learning problems differ from one another - different children have diverse

types of learning problems related to different reasons (origin) (Kavkler, 2003).

Child development characteristics can cause learning difficulties and school failure, i.e. (Kos, 2005): low intellectual disability, mental problems, specific learning disorders, hyperkinetic syndrome, language problems, diseases and disabilities (especially diseases that affect the brain), visual and hearing impairment, emotional problems, psychosocial disorders and lack of motivation for learning.

Learning problems can be caused by family and school-originated factors as well. Family-originated factors vary among:

- A family of sociocultural environment that does not stimulate learning;
- A family that does not motivate and stimulate a child to learn;
- A family that burdens the child with work obligations;
- A family with bad interpersonal relationships, severe social conditions, low educational level of parents;
- A family that is unable to help.

Important school-originated factors that can cause learning problems are:

- Poor professional level of teachers;
- Poor organization of school work;

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- Non-stimulating school environment;
- An unattractive and non-motivating approach and pedagogical work;
- Bad ecological conditions in the school;
- Inadequate teaching staff for children with special educational needs;
- Biological and psychological factors.

According to [Fisher and Cumings \(2008\)](#), there are seven types of learning difficulties: problems in speaking and listening, in reading, in writing, difficulties in learning mathematics, in organizations skills, problems with social skills and motor skills.

Regarding the modern perspective of interaction, children with learning difficulties can be divided into three basic categories ([Adelman and Taylor, 1986](#)):

The first category of problems includes the problem in learning as a result of cultural and economic deprivation, inaccessibility, multiculturalism or some chronic stress in the children's environment.

The second category of problems consists combination of factors (reciprocal interaction). This group includes children with mild specific learning disabilities. The characteristics of the child such as: his activity, approaches in new situations, acceptance of new individuals, ability to adapt in new circumstances, his mood, endurance, mental strength, occur as a result of interaction between biological and environmental factors.

The third category includes children with problems that are created by primary causes (neurological disorders, developmental or motivational problems and severe disabilities). These children are often with impaired rhythmic physiological activity (e.g. sleeping disturbance), they have difficulties to learn from experience, have a bad psychic organization, and there are many hyperactive children among this group of children with adaptation problems, usually in a bad mood.

Children with mild intellectual disability (ID) have a lot of learning difficulties. They are developing according to the rules that apply to all children, but their development process is slower than usual, and limited according to the level of the ID ([Ajdinski, Keskinova and Memedi, 2017](#)).

Among the students with intellectual problems, developmental disabilities can occur in the forms of:

- Lack of motor control and poor coordination;
- Sensory barriers of varying degrees;

- Language and speech disorders;
- Problems in cognitive functions.

Developmental process of the child with ID is characterized by delayed and longer duration of individual phases of development ([Bala and Novak, 1991](#)). An intellectual deficiency entails a series of changes in the characteristics of the child's personality. A large number of studies point out in the mental representations, emotions, memory, attention, speech and language abilities, as well as changes in sensory perception, motivation, behavior, social characteristics and overall functioning in everyday activities, which creates a complex person of the child with ID ([Ajdinski, 2000](#)). The complexity of the development results with a series of problems in the learning process, which requires an individual process of identification and individual work plan.

Similar learning problems can also occur in a group of students who do not have ID, but they achieve poor results in one or more areas, thus of their potential, education and child motivation ([Wong, 1996](#)). These are students with specific learning disabilities - SLD (students with dyslexia, dysgraphia and dyscalculia) owning development potential which usually allows the typical psychosocial development, but is facing difficulty in timely recognition and treatment of these disabilities ([Lester and Kelman, 1997](#)).

It is important to distinguish these two groups of students, students with ID and students with SLD. Without adequate treatment they both have poor academic achievement, but these are groups of students with different problems and developmental abilities, with the need for different individual approach and expectation of their progress.

To assess the learning opportunities and the specific problems that can occur during the educational process, it is particularly important to define, delineate and assess the opportunities and potentials of the learner himself. The auditory, visual and motor skills, as well as the skills for vocal communication, are very important for expression and establishment of contact with the environment, additionally for presentation of their own experiences and knowledge.

Moreover, we will give an overview of the connection between these abilities and the learning process, among children with intellectual disability and children with typical development.

2. MATERIALS AND METHODS

The Aim of the research is analysis of the specific learning problems of students with a mild ID. In order to accomplish the aim we have set the following tasks:

- To detect the prevalence of specific learning problems among students with a mild ID;
- To detect the type of specific problems that can occur among these students (integrative, visual motor abilities and abilities for attention);
- To detect the prevalence of specific learning problems in the control group, among students with typical development;
- To detect reciprocal link between development and learning ability.

Research instruments - we used ACADIA test (Atkinson, Johnston and Lindsaz, 1972). The test itself is consisted of 13 subtests for assessing the overall individual functioning, and in our research we used all of them. The maximum points for each subtest are 20.

For the need of our research, we divided them in three groups: subtests for *integrative abilities* (subtests for visual discrimination, audio-visual discrimination, ability in forming concepts, sequence and encryption, language development and visual association); *subtest for visual motor abilities* (subtests for visual motor coordination and forms drawing); *subtest for assessing of attention* (subtests for auditory discrimination, visual memory, auditory memory and automatic language). The last subtest (no.13, for assessing the ability for drawing) cannot be classified in the aforementioned groups. That subtest has been analyzed individually.

For the analysis and interpretation of the obtained results, we used the key of the test itself, where we have made comparison between the obtained points and calculate standard deviation (SD). Further, we have used Mode (Mo) values (of a set of data values is the value that appears most often, in other words, it is the value that is most likely to be sampled.). In the results analysis we used average scores of the children, so Mo value help us to have clear image for the real distribution of the scores.

Data analysis was accomplished by using the χ^2 test, for connection between two independent variables at a level of significance of 0.01, as well as percentages.

Sample - The research involved 144 students. We divided the sample into two groups.

The first group, our target group, consisted of 64 students with mild ID, who study in the special elementary schools (SES) in the Republic of Macedonia, in SES "Idnina" and SES "Dr. Zlatan Stremac". Further, the control group consisted of 80 students (from third and fifth grade) with typical development, from the mainstream elementary school "Vojdan Cernodrinski", in Skopje.

3. RESULTS

Table 1 presents the results obtained from the analysis of the subtests of students with ID and the control group. Subtests are sorted according to the achievement of the students with ID, i.e. according to SD of the results, starting from the smallest SD.

Table 1. Obtained results in the subtests in both groups of students

Subtest	Students with ID			Control group		
	SD	Average scores	Mo of average scores	SD	Average scores	Mo of average scores
Visual association	0.52	13.38	20	0.02	18.16	20
Sequence and encryption	1.05	10.06	12	0.14	15.52	16
Language development	1.25	13.17	15	0.1	18.49	19
Visual discrimination	1.27	10.48	0	0.1	18.66	20
Shapes drawing	1.4	7.76	9	0.24	14.67	18
Auditory discrimination	1.41	9.7	0	0.14	17.7	19
Drawing	1.65	10.83	12	0.32	15.33	16
Visual motor coordination	1.67	9.27	9	0.43	15.21	13
Audio-visual discrimination	1.78	12.32	12	0.13	19	20
Automatic language	1.94	4.71	0	0.06	15.3	12
Ability in forming concepts	1.98	7.21	7	0.12	15.12	14
Visual memory	2.93	9.08	10	0.41	15.95	17
Auditory memory	2.98	3.23	0	0.66	10.26	13

As we expected, children with ID achieved low scores with very high SD on every assessed ability. As we go down the table, we have higher SD and the student's achievements are smaller.

Both groups of students achieved best results on the subtest for visual association and lowest results on the subtest for auditory memory.

Among students with ID, in the last columns for Mo values we can see that 0 as the most frequent result occurred in 4 subtests

including subtest for auditory memory. In the subtest for visual association Mo is 20. It is the most commonly achieved result, and at the same time maximum possible points that can be achieved.

In the further section of the text we are presenting obtained results sorted in three groups according to the abilities they are assessing.

Table 2. Integrative abilities in students with ID and the control group

Subtests	Students with ID		Control group	
	SD	Average scores	SD	Average scores
Visual discrimination	1.27	10.48	0.1	18.66
Audio-visual discrimination	1.78	12.32	0.13	19
Sequence and encryption	1.05	10.06	0.14	15.52
Ability in forming concepts	1.98	7.21	0.12	15.12
Language development	1.25	13.17	0.1	18.49
Visual association	0.52	13.38	0.02	18.16
Total	1.42	9.69	0.1	17.49

Students with ID achieve results with 1.42 SD and average achieved points of 9.69. Students from the control group achieved results with 0.1 SD and 14.49 average points.

Table 3. Visual motor abilities in students with ID and the control group

Subtest	Students with ID		Control group	
	SD	Average scores	SD	Average scores
Visual motor coordination	1.67	9.27	0.43	15.21
Shapes drawing	1.4	7.76	0.24	14.67
Total	1.53	8.51	0.33	14.94

Students with ID have high SD value of 1.53, and lower average points of 8.51. In the control group, students achieved 0.33 for SD and 14.94 average overall points.

Table 4. Ability for attention in students with ID and the control group

Subtest	Students with ID		Control group	
	SD	Average scores	SD	Average scores
Auditory discrimination	1.41	9.7	0.14	17.7
Visual memory	2.93	9.08	0.41	15.95
Auditory memory	2.98	3.23	0.66	10.26
Automatic language	1.94	4.71	0.06	15.3
Total	2.31	6.68	0.32	14.8

Students with ID have SD value of 2.31, and lower average points of 6.68. In the control group, students achieved results with 0.32 SD and 14.80 average overall points.

Further we make analysis to detect the percentage of students with SLD among students in the control group and we try to detect in which grade these problems are most common.

Table 5 presents the results in terms of the frequency of SLD. Student with SLD is each one that showed a deviation of 2 or more SD in two or more abilities.

Table 5. SLD among students in the control group

Grade	Students with SLD		Other students		Total
	N	%	N	%	
III	7	30.43	16	69.57	23
IV	3	10	27	90	30
V	1	3.7	26	96.3	27
Total	11	13.75	69	86.25	80
$\chi^2 = 8.05$ df=2 p= 0.018					

We find high percentage of students with SLD, with generally average value in all grades of 13.75%.

By using χ^2 , we have made a comparison between the achievements of students in all grades, and we found that there is a statistically significant difference between those two variables, at a level of 0.05 of statistical significance.

Within the control group, we also analyzed the duration of the development process of the assessed abilities. Obtained data are presented at table 6, sorted by two criterions: detected difference in SD and achieved points between the students from third and fifth grade.

Table 6. Development skills of students in the control group sorted by the intensity of development during the school period

Subtests	Differences between SD	Differences between achieved scores
Auditory memory	0.82	4.18
Drawing	0.7	8.46
Shapes drawing	0.62	4.98
Visual discrimination	0.35	1.98
Audio-visual discrimination	0.3	0.99
Auditory discrimination	0.27	3.04
Visual memory	0.25	2.41
Ability in creating concepts	0.22	2.5
Automatic language	0.13	3.78
Sequence and encryption	0.1	1.35
Visual association	0.09	1.55
Language development	0.07	0.65

The abilities that showed greater dependence on the calendar age, i.e. they have more intensive development in that period, are given in the beginning of the table. As we descend down the table, the intensity of the developmental ability decreases.

4. DISCUSSIONS

According to the results presented in Table 1 and according to the high values of SD and low achieved results, we can highlight that the intellectual deficit has a significant influence on the persons' development abilities.

According to the individual subtests analysis we have found that the ability for visual association is best developed among students with ID (where SD is 0.52, average achieved results are 13.38 points, and Mo is 20), i.e. intellectual deficit has low influence on this ability. ID has more influence on the abilities of creating concepts, visual memory and especially on the ability for auditory

memory where the students achieved lowest results (where SD is 2.98, average achieved results are 3.23 points, and Mo is 0).

The individual subtest analysis shows similar results in the control group, where we have found that the best developed ability is the ability for visual association (with SD of 0.02, highest average points of 18.16, and Mo is 20 points), and the lowest development was noticed on the ability for auditory memory (where SD is 0.66, with the lowest achieved points of 10.26, Mo is 13). At the same time, the students from the control group showed well-developed ability for automatic language, visual discrimination, but faced higher difficulties in the ability of visual memory and visual-motor coordination.

Regarding the factual analysis of the subtests, where we sorted the subtests by the function they evaluate (integrative, visual-motor and ability of attention), we obtained similar results in both groups of the respondents.

The students, regardless of the group they belong to, achieved best results on the subtests for evaluating the integrative abilities, especially on the subtest for visual discrimination. Furthermore, in terms of the other abilities we have different results between the groups. Among the students with ID, the visual motor abilities proved to be better developed compared to the attention abilities.

The students in the control group show similar results in those two types of subtests, without a significant difference between them.

Analysis of the control group allowed us to determine the percentage of students with SLD in the school population. In our control group that percentage is 13.75%. We have the largest number of students with SLD among younger students, from third grade, and then, following the increase of their age, through the process of maturing, gaining experience and education, the number of students with SLD is reduced and the same percentage in fifth grade is 3.7%. With this we can conclude that some problems can disappear during the growing process, but still there are problems that require additional and professional treatment.

Detailed analysis of each subtest shows us that there is an improvement on almost every ability among the students in higher grades, i.e. those abilities are still developing during the young school period. Except the visual-motor ability, in which the students from III grade achieved better results than the other students.

A similar study was conducted in 2005

by using the same ACADIA test on the school age children. According to the results, most of the children (86.4%) had a standard development. The other students showed results with deviation, 9.3% of them have (have had) elementary learning disabilities, and their achievement was within 1SD, while 4.3% of the children had specific learning problems and achievement with 2 or more SD (Golubović, S, 2005).

In 2010, ACADIA test was used to assess the developmental abilities among students with learning disabilities. They showed best results on the subtest for visual motor abilities as well as for sequence and encryption, where 24% of the responders had results with 2 SD. The lowest results that students achieved were on the subtests for language abilities, i.e. subtest for language development (where 52% of the students have results with 2 or more SD) and subtest for automatic language (where 46% of the students have results with 2 or more SD). As a general conclusion, the authors Glicorović and Radić Šestić (2010) state that the basic difficulties that may occur in one or more development abilities are simultaneously reflected in other areas which causes school failure.

5. CONCLUSIONS

According to the research aims we can emphasize the following conclusions:

- All students with ID have special learning problems, with very good ability for visual association, and a lot of problems with the ability of auditory memory.
- From all assessed abilities, integrative abilities are best developed among students with ID, which are very important for synthesizing and transferring learning to new situations. Biggest problems occurred in motor abilities and the abilities for attention.
- In the control group we have found that 3.7% of the students faced SLD and need additional treatment during their educational process.
- All of the assessed abilities (except visual-motor ability) are still developing during the young school period, which means that in this development period we should use simulative programs for improving the abilities.
- Finally, we can conclude that students with mild ID and students with SLD have partly similar characteristics in development abilities. According to the results of our research and with comparison with other relevant re-

searches, we have shown that both groups had problems in development abilities. But among the students with ID we have a wide range of limited development abilities, whilst among the students with SLD, the limitation is usually on one ability. The difference exists also in terms of the limitation of functions. In students with ID the deviations are much more likely to move up to 5 SD, and among the students with the SLD the worst achievements note a deviation of no more than 3 SD. It is important to note that the quantitative similarity of the percentage does not implicate qualitative similarity. The frequency of experiencing problems is very similar in both groups, but qualitatively these problems differ among themselves, they have different structure, different intensity and require a different approach.

In order to improve the educational opportunities of persons with ID and SLD, we consider it important to take the following activities:

- Using of a functional diagnosis for the persons with ID, which will include an assessment of all personal abilities. This assessment should be repeated every 6 months and even earlier if necessary.
- Preparation of a protocol for assessing the students' development abilities that would be applied by all institutions that treat children with mild ID, i.e. students with SLD.
- From all developmental abilities that we assessed the abilities for auditory memory are least developed, therefore we consider that in the future the professional treatment should be directed towards stimulating it, regardless of whether it is a student with ID or a student with SLD.
- All students have well developed ability for visual association, therefore our recommendation is much more frequent use of this well-developed ability during the educational process.
- Employing a special educator in all regular schools. He would have dominant role in the educational process of children with ID, but also in educational process of students with SLD. According to this, the role of the Special Education would be increased, the educator itself should make a distinction between these two groups of students and at the same time be the carrier of organizing appropriate treatment of students by finding adequate methods and techniques for work.

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Conflict of interests

The authors declare no conflict of interest.

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DECISION-MAKING AT DIFFERENT LEVELS OF RATIONALITY: SUBJECTS'S COGNITIVE, NEURAL AND PSYCHO-DYNAMIC CHARACTERISTICS

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ABSTRACT

In modern science, the issue of studying the decision-making process is challenging. If these decisions are connected with finances: monetary gains or losses - the problem becomes even more acute. Decision-making is almost always connected with risk and uncertainty. In order to investigate the problem of financial decision-making at risk laboratory studies have been conducted to determine the degree of rationality of such decisions as well as the neural and psychodynamic characteristics of the subject. This paper presents the results of the study of this problem at the extreme values of the probability of a gain or a loss - 0.99 and 0.01.

Keywords:

*decision-making,
risk,
neural and psychodynamic
characteristics,
oculomotor activity.*

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1. INTRODUCTION

The problem of research on decision-making process and its psychological components remains relevant to modern scientific knowledge. The first approaches to its study have been formulated in the works of [J. Von Neumann and Morgenstern \(1944\)](#) within the theory of games and economic behavior and the main stages of decision-making have been defined (building alternatives, evaluating them

and choosing the best alternative) ([Morosanova and Indina, 2011](#)). As a cross-cutting issue decision-making process has been explored both through a formalized research strategy, using mathematical and computer-based tools peculiar to economic and engineering sciences and using qualitative methods of analysis used in psychology.

The psychological researches of a decision-making problem conducted by [Brushlinsky A. V. \(1994\)](#), [Velichkovskiy B. M. \(2006\)](#), [Gurova L. L. \(1976\), \(1984\)](#), [Zhuravlev A. A. \(2005\)](#), [Zhuravlev and Kupreychenko, \(2003\)](#), [Karpov A. V. \(2000, January/February\)](#), [Kitov A. I. \(1983\)](#), [Kornilova T. V. \(2010\), \(2015\)](#), [Lomov B. F. \(1981\)](#), [Lomov and Zhuravlev, \(1978\)](#), [Shadrikov V. D. \(Shadrikov and Karpov, 1983\)](#), [Kochetkov V. V. \(2008\)](#), [Skotnikova I. G. \(Kochetkov and Skotnikova, 1993\)](#)) allowed to analyze a complex of not only situational decision-making determinants, but

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also individual and psychological ones. The works also focus on the identification of heuristic strategies for alternative choices. Decision-making is studied within psychology of management (V. A. Abchuk (2010), Kornilova T. V. (2010), V. V. Grigolova (1981), D. N. Zavalishina (Zavalishina, DN, Lomov, BF, and Rubakhin, VF., 1979), A. V. Karpov (2000, January/February), T. V. Kornilova (2005), V. V. Kochetkov (2008), I. Khol (1975), O. I. Larichev (Larichev, OI, Kortnev, AV, and Kochin, DY, 2002), B. F. Lomov (1981), E. V. Markova (Karpov and Markova, 2003), E. F. Rubahin (Zhuravlev, AP, Rubakhin, VF, and Shorin, VG., 1981), I. G. Skotnikova (Shendryapin and Skotnikova, 2015), L.N. Sumarokov (Sumarokov and Timofeeva, 1990), A. V. Fillipov (2001) and etc.) and new area of interdisciplinary knowledge – economic or financial behavior (Grishina, NP, Belykh, TV, and Sidorov, SP., 2015).

Cognitive psychology, by examining the decision-making process, aims to identify the characteristics of the strategy in experimental conditions and the way it is implemented, which are used by the subject on the basis of an analysis of information and orientation in situations. The choice of strategy, as well as the style of decision-making, may depend both on the structurally functional characteristics of personality and on the generated and potential cognitive factors (the nature of the information processing, the existence of cognitive capacity, cognitive and psychodynamic plasticity).

The purpose of the study is to identify individual differences in oculomotor activity, neural and psychodynamic characteristics of personality that determine the rational/irrational way of making a financial decision and the preference for subject of risk or guaranteed gain in the modelled conditions.

2. MATERIALS AND METHODS

In this study the formalized interviewing technique and the procedure of the laboratory experiment were applied to detect the intraindividual differences on the neurodynamic and psychodynamic level of the integral personality, depending on the respondents' preference for guaranteed success or risk when making financial decisions.

The methodology of E.P.Ilyin is a tapping test, which reveals the characteristics of the neural system properties with the help of psychomotor indicators (Eliseeva, 2003). The

questionnaire "Formally-dynamic personal properties" V. M. Rusalova is aimed at identifying the psychodynamic features in the intellectual, communicative and psychomotor spheres. The laboratory experiment is used to study the financial decision-making process under modelled conditions.

In order to achieve the goal of the study a psychological and mathematical simulation was carried out of financial decision-making situations with different degrees of risk, using a hardware method to register the movement of an eye activity with the help of the eye tracking system, a model RED 500 System (SensoMotorik Instruments GmbH). 76 people aged 18-50 years took part in the study. The group of experts whose results we compare with the general sample of the students was singled out among the subjects.

Kahneman and Tversky's prospect theory is used as the basis for our experiment (Kahneman and Tversky, 1979). The subjects were consistently faced with a choice between two alternatives, one of which was a probability assessment of the risk to lose or gain a certain amount of money and the other one was either sure gain or sure loss of more/less certain amount of money. As a risk alternative we took the prospects offered by Kahneman and Tversky (Tversky and Kahneman, 1992). A guaranteed option is a risk-free outcome in a particular monetary equivalent. The amount of monetary equivalent is fixed in a similar way as the study of Kahneman and Tversky as logarithmically distributed between the extreme values perspective outcomes. For example, "99% chance to win nothing and 1% chance to win \$200" have values of a logarithmic function distributed between 0 and \$200. The number of guaranteed values was reduced from the initial seven to five, as the goal of setting a threshold for risk-aversion or risk seeking as well as loss aversion is not fundamental for our study.

The logarithmic distribution takes into account probability assessment and offers values that are comparable to the risk option in terms of common sense.

The definition of the risk perspective itself was also modified. We switched from the term "odds" to the term "probability" and we used shares instead of percent.

Having two alternatives the subject has the information about preliminary calculated expected value and dispersion (as a risk measure) for the given choice, which allows to assess the degree of every subjects' rationality when making decisions.

The article presents results for the extreme probability of a gain or a loss - 0.99 and 0.01.

The results were carefully analyzed and distributed to the groups with different degrees of rationality. Our analysis uses the following definitions of specific decisions:

- rational (+)
- risk- averting (RA)
- risk-seeking (RS)
- loss-averting (LS)
- irrational (-)

In order to determine group membership the expected value and dispersion (risk measure) of the risk option are compared with the same parameters of the guaranteed outcome.

Table 1. Comparison of expected value and dispersion of the risk option with the guaranteed outcome in win-win situations

	+	RA	RS	-
Expected value	\geq	<	>	<
Dispersion	<	<	>	>

Table 2. Comparison of expected value and dispersion of the risk option with the guaranteed outcome in lose-lose situations

	+	RA	LA	-
Expected value	>	\leq	\geq	<
Dispersion	<	<	>	>

After detailed analysis of the decisions of each subject, it is necessary to distribute the entire sample across groups according to the rationality of the decisions. According to [Markowitz \(1952\)](#), a rational investor prefers more to less and certainty to uncertainty. Thus, we believe that the percentage of rationality is a combination of rational and risk-averting decisions in the total number of the offered choices (+ and RA).

Then all the subjects are divided into three groups:

- rational only (>60% of rationality)
- marginal (60-40% of rationality)
- irrational only(<40% of rationality)

The same procedure is used to determine the rationality of decisions in subgroups of financial decision-making:

- gains with a probability 0.99
- gains with a probability 0.01
- losses with a probability 0.99
- losses with a probability 0.01

3. RESULTS

The conducted study has revealed the intra-individual differences in financial decision-making with different degree of risk or preference of receiving the guaranteed success.

The respondents who prefer the guaranteed outcome have the most stable and medium strong type of nervous system that allows to sustain high levels of activity or to maintain the mobilization of efforts at the rate, which is optimal for human body

The respondents who are risk-takers mostly have the stable type of nervous system, but also there are represented weak, medium weak and medium strong types of nervous system. It reflects greater variability of typological nervous system properties of the respondents of this group. And also it suggests that risk acceptance may be a result of the weak capacity to maintain high level of suspension during making a choice.

When comparing the psychodynamic characteristic, the two samples revealed differences in indicators such as ergicity, plasticity and intelligent velocity. These indicators are more conspicuous in a group of respondents with a preference for risk when making a financial decision. At the same time intellectual emotionality characterized as lability in emotions' display is more common to the respondents who prefer the guaranteed outcome when making financial decisions.

In order to identify latent factors of cognitive processing in decision-making the peculiarities of the oculomotor activity were under investigation on the second stage of the study, furthermore the subjects were divided into three groups by degree of decision-making rationality, which has been identified by the ratio of preferred risk in each of the situations with the help of a mathematical expectation indicator. Three groups of respondents were identified during the experiment: 1 group -rational (25%), 2 group – marginal (42%), 3 group-irrational (33%).

The percentage of rationality of the adopted financial decisions showed that the largest number of subjects represents the marginal group for the entire sample, for the sample excluding experts as well as in the expert group.

Table 3. Results of testees' distribution for groups depending on the rationality of the adopted decisions

	Entire sample		Sample excluding experts		Experts	
	Number	%	Number	%	Number	%
Rational only	18	23	15	21	3	27
Marginal	33	43	26	41	7	63
Irrational only	25	32	24	36	1	9
Total	76	100	65	100	11	100

In the analysis of the results we also studied rationality in subgroups to obtain more information about the conditions in which the subjects are the most irrational. An analysis of the rationality of decisions in subgroups of financial decision-making situations has shown that the greatest cumulative percent of rationality corresponds to a win-win situation with the probability of 0.99. Further there are subgroups of a lose-lose situation with probability 0.01 and a win-win situation with probability 0.99. The least rationality is noted in the subgroup of loss situations with the probability of 0.99.

It can be concluded that an extremely high probability of a loss has a strong impact on the rationality of financial decision-making. The data obtained in the subgroups allow to carry out a more profound study of the conditions of test subjects' sustainability.

The results of a statistical analysis according to Mann-Whitney criterion revealed differences in oculomotor activity among people with different degrees of rationality.

The data expressed in the oculomotor activity of the decision maker and their significant statistical differences in the compared groups are represented in Table 4.

Table 4. The oculomotor activity indicators of the respondents with different level of rationality (making financial decision with probability 0.01 and 0.99)

Indicators	Rational	Irrational	Marginal
1 End Time [ms]	7609,317	9839,272	o 9478,021 o
2 Blink Count	1,937	3,73	o 4,23 o Δ
3 Blink Frequency [count/s]	0,247	0,35	o 0,41 o Δ
4 Blink Duration Total [ms]	537,496	812,841	o 998,493 o Δ
5 Blink Duration Average [ms]	256,67	189,35	o 187,72
6 Blink Duration Minimum [ms]	155,94	97,95	o 87,96 o Δ
7 Fixation Count	23,751	29,49	o 28,71 o
8 Fixation Frequency [count/s]	3,097	3,031	o 3,037 o Δ
9 Fixation Duration Total [ms]	4253,019	5026,018	o 5109,882 o Δ
10 Fixation Duration Average [ms]	168,515	171,904	183,396 Δ
11 Fixation Duration Maximum [ms]	510,54	409,55	o 508,64 Δ
12 Fixation Duration Minimum [ms]	58,99	57,25	o 59,63 Δ
13 Fixation Dispersion Total [px]	1616,535	2304,447	o 2103,124 o
14 Fixation Dispersion Average [px]	65,27	79,02	o 110,83 Δ
15 Fixation Dispersion Maximum [px]	273,83	372,4	o 451,42
16 Fixation Dispersion Minimum [px]	36,74	26,97	21,21 o Δ
17 Scanpath Length [px]	5297,437	6935,024	o 6530,591 o
18 Saccade Count	42,217	59,75	o 50,84 o Δ
19 Saccade Frequency [count/s]	5,549	5,828	o 5,289 o Δ
20 Saccade Duration Total [ms]	2004,597	2696,002	o 2309,903 o
21 Saccade Duration Maximum [ms]	112,94	114,78	o 113,73 Δ
22 Saccade Duration Minimum [ms]	23,2	22,79	o 23,16 Δ
23 Saccade Amplitude Total [°]	195,351	269,415	o 251,71 o
24 Saccade Amplitude Average [°]	5,14	5,21	5,09 o
25 Saccade Amplitude Maximum [°]	30,66	34,4	o 35,87
26 Saccade Velocity Total [°/s]	3365,475	4939,815	o 4644,332 o
27 Saccade Velocity Maximum [°/s]	276,19	379,42	o 373,75
28 Saccade Velocity Minimum [°/s]	28,93	28,22	o 33,65 Δ
29 Saccade Latency Average [ms]	149,71	138,859	o 155,931 o Δ

Note: significant differences o - in comparison with the group 'rational'; Δ - in comparison with the group 'marginal', p≤0,05.

On the basis of the data provided, the respondents of the "rational" group in comparison with the marginal group spent less time to make a decision. The indicator – Scanpath Length, which is less in the group of rational respondents, also confirms this.

The maximum number, frequency and total duration of the blinks (Blink Frequency and Total Duration indicators) were most expressed by respondents demonstrating an irrational strategy for decision-making. This data implicitly indicates the increased emotion of the group's respondents, which determines the time taken to make decisions and reflects the specific style of its characteristics.

Both significant differences and similarities in fixation indicators were identified. The rational and irrational respondents have significantly more fixations rather than the marginal group. It indicates the similarities

in the way the incoming information is processed – a thought delay in assessing choice alternatives. However, the “rational” respondents have considerably less number of fixations and their total and average dispersion. For members of the “irrational” group, the value of the overall and average duration of the fixation is clearly greater. This is different than in the first group, the information-processing strategy and the greater inclination to “Immersion” in the choice situation, which is related to the greater emotion.

Significant differences were found in three samples for saccades indicators. Thus, the number, total and maximum duration of the saccades, as well as the latent saccades period, are significantly higher at the “margin-al” respondents. They also have the smallest Saccade Duration Minimum indicator. The marginal respondents have the maximum frequency of saccades and the irrational respondents have the minimum frequency. The overall amplitude and the overall velocity of the saccades are faithfully lower among the representatives of the “rational” group, which shows less exposure to situational and emotional factors. This data confirms once again that there is a way for each group of comparisons to process information when making decisions that determine the differences in the time spent on decision-making and style preferences.

4. DISCUSSIONS

Cognitive psychology has long been studying the decision-making process. Today, the task of identification of the features of the strategy and the way it is implemented in reality is set in the experimental conditions. The subject of decision-making uses these strategies on the basis of analysis of the information presented and orientation in the situation. On the one hand, the choice of strategy, as well as the style of decision-making, can depend on the structural and functional characteristics of individuality. On the other hand, it depends on the formed and potential cognitive factors (the nature of information processing, the presence of cognitive potential, cognitive and psychodynamic plasticity).

The ability to identify such individual strategies or styles allows us in prospective to predict the degree of rationality of a solution in a risk environment. Also, we assume that these strategies can change with the course of life and the acquisition of different experiences. Being well aware of the mechanism

of forming the style of decision-making, we can change it in order to improve the degree of rationality of future financial decisions.

5. CONCLUSIONS

Summarizing, it is important to note, that the study has revealed the important trends in the identification of the cognitive and intra-individual differences in financial decision-making with different degrees of risk or the preference for the guaranteed success.

It is revealed that emotional lability at intellectual data processing and also unequally probable combination of stable, weak, medium weak and medium strong types of nervous system are common to the respondents who prefer the guaranteed result when making financial decisions. Such a combination of split-level personality properties explains testees' preference for the guaranteed result in terms of greater expressed emotionality at the level of temperament and less energy endurance at the level of nervous system properties.

Intellectual endurance, high speed of intellectual information processing, intellectual plasticity in combination with stable and medium strong type of nervous system create conditions for taking risks in the context of economic behaviour.

The nature of the cognitive information processing at an assessment of alternatives in the modelled financial decision-making environment varies among respondents, depending on the expressed rationality/irrationality. The oculomotor activity implicitly reflects the strategy and style features of decision-making, which is reflected in the amount of time taken to make decisions, the degree of emotion when choosing the proposed alternatives, the degree of “immersion” into the situation. The identified trends suggest that a similar research model could be used to identify the intra-individual determinants of decision-making in the context of personal economic behavior.

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Conflict of interests

The authors declare no conflict of interest.

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COGNITIVE DIALOG GAMES AS COGNITIVE ASSISTANTS: TRACKING AND ADAPTING KNOWLEDGE AND INTERACTIONS IN STUDENT'S DIALOGS

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ABSTRACT

This study introduces a system design in a form of cognitive dialog game (DiaCog) to support pedagogical factors and student learning model ideas. The purpose of the study is to describe how such a design achieves tracking and adapting students' knowledge and mastery learning levels as a cognitive assistant. Also, this study shows alternative ways for supporting intelligent personal learning, tutoring systems, and MOOCs. This paper explains method called DiaCog that uses structure for students' thinking in an online dialog by tracking student's level of learning/knowledge status. The methodology of computing is the semantic that match between students' interactions in a dialog. By this way it informs DiaCog's learner model to inform the pedagogical model. Semantic fingerprint matching method of DiaCog allows making comparisons with expert knowledge to detect students' mastery levels in learning. The paper concludes with the DiaCog tool and methodologies that used for intelligent cognitive assistant design to implement pedagogical and learner model to track and adapt students' learning. Finally, this paper discusses future improvements and planned experimental set up to advance the techniques introduced in DiaCog design.

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1. INTRODUCTION

Intelligent cognitive assistants and tools can be implemented in e-learning platforms and massive open online source courses systems (MOOCs) to reduce the educational costs and improving life quality of people and to address the educational needs of people who are unable to leave their home due to their care needs. Although such users can easily access to current MOOCs platforms, they may not fully benefit from them since there are some technical challenges to overcome. For example, MOOCs platforms are usually criticized

about failing to provide a social environment that enables having constructive cognitive feedback opportunities in a sustained engagement during the online courses (Nkuyubwatsi, 2013; Kop et al., 2011; Zapata, 2010).

Discussion forums are used where students have most of the social interaction to help each other and to discuss ideas related to the learning topics in MOOCs (Ezen-Can et al., 2015). Discussing ideas on learning topic have positive impacts on students learning and building knowledge in online platforms (Palmer et al., 2008).

On the other hand, we observe that discussion forums bring several issues in learning despite their positive benefits on learning. For example, a poor designed and implemented discussion forum activity may not support to discuss at all. The engagement of students may be very superficial (Bain, 2011; Hawkey, 2003; Thomas, 2002). Thus, discussion on online platforms may provide support for learning but it is not guaranteed that all the participants of the dialog may join to the ongoing

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discussion or the discussion is deep and meaningful. There is still have more to explore in students' dialog in technology supported applications. Especially, we need to know which students actively and meaningfully participate to the dialogs and which of them learn from the dialog as the knowledge building activities emerges in ongoing dialogs.

Using new cognitive assistants can be supported with contemporary dialog technologies. By this way, it may be possible to improve students' positive learning results by tracking meaningful dialog participation and interaction. To enable these functions, it is possible to design modern applications that track and adapt knowledge level of students. It may allow us to closely understand students' dialog-based learning interactions.

To address the need of designing new applications as described here, this study discusses the design of a modern learning tool that is called as DiaCog. The remaining of the paper presents how DiaCog design enables alternative dialogic interactions and modeling learning processes in a meaningful way.

2. MATERIALS AND METHODS

2.1. Designing Interaction and Interface

Table 1 shows a part of a hypothetical dialog. This dialogue is an example of interaction between players in a typical dialogue game. Dialog may go in a way that the players may reply to previous entries so that there is no linear order in the dialog. Therefore, the ongoing dialog cannot be read as reading a page of a book in a top to down direction because the events are non-linear. The rounds are indicated by round numbers in the first bracket and the dialog moves are coded in the second bracket at the end of players' entries.

Table 1. An Example Dialog

START: Copyright laws and policy could be better aligned with the interests of both consumers and copyright holders.

Player A: I agree, although the Copyright Act attempts to balance culture and commerce through exclusive incentive models and fair use defenses, the law just doesn't seem to be keeping up with the way end users, developers, and content creators operate in the digital sphere [Round 1], [Agree].

Player D: For instance, current copyright laws are inadequate for the digital age anyway, some legal experts says "Most of it was written more than a quarter century ago," [Round 1], [Support].

Player A: For example, we see it all the time on YouTube: people communicating through shared content without permissions. [Round 3], [Agree].

Player B: Is it the case that, the Copyright Act protects "original expression," but what is considered "original"? [Round 1], [Question].

Player C: I read that, a work can only be original if it is the result of independent creative effort. It will not be original if it has been copied from something that already exists. If it is similar to something that already exists but there has been no copying from the existing work either directly or indirectly, then it may be original. [Round 1], [Inform].

Player B: I am not sure about that, copyright protection should not depend on the artistic quality or merit of a work [Round 2], [Challenge].

Player C: I read that, the term "original" also involves a test of substantiality - literary, dramatic, musical and artistic works will not be original if there has not been sufficient skill and labor expended in their creation. But, sometimes significant investment of resources without significant intellectual input can still count as sufficient skill and labor. [Round 2], [Support].

DiaCog has essential functions such as a)interface interactions tied to the meaning that the users wish to communicate, b)dialog roles and specific rooms, c)structured moves categorized as interface elements, and d)dialog rules in order to carry the user's goals (e.g. turn taking). These functions create the basic environment for successful collaborative argumentations that teachers may apply dialog-

based learning scenarios to support students in practicing their argumentation skills and creative thinking skills.

Figure 1 illustrates the typical design of DiaCog's dialog game window. In Figure 1, participants are required to select moves from the list of available speech acts (see Label #1) and related openers (see Label#2) and type a free text of their response into the text box (see Label #3). After finishing building the expressions, participants submit their replies once they click the "Act" button ("See Label #4).

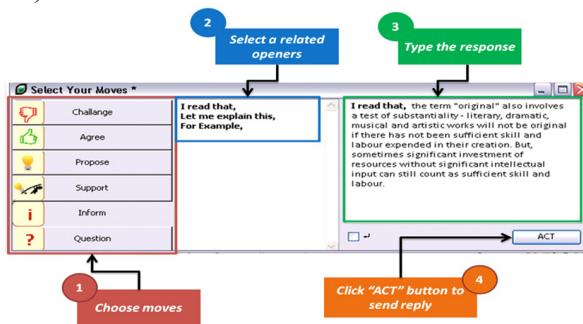


Figure 1. The typical design of DiaCog's dialog game

2.2. Design of Pedagogical and Learner Models in DiaCog

Student state tracking and adaptation is a common application in intelligent tutoring system (ITS), which can guide us for the design decisions for cognitive assistant implementations. In the context of modern ITS design, the educational needs of students are tracked and adapted by domain model, pedagogical model and learner model. Domain model (DM) tracks the set of skills, atomic components of knowledge objects and content-based strategies. Learner model(LM) tracks cognitive, motivational, affective and other psychological states of learners during the tutoring activities. Pedagogical model (PM) decides tutoring strategies and course of action by taking input from LM and DM.

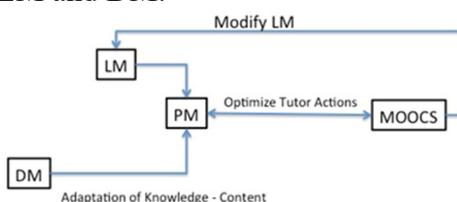


Figure 2. Presentation and relations of LM, PM, and DM

As Figure 2 demonstrates, since LM and DM feed PM, it is a better to decide the PM

design first before deciding for the LM design (DM will not be discussed here since it may dramatically change due to the topic and learning domain which is difficult to comprehend in the study). Following section describes the pedagogical strategies for designing PM.

2.3. Pedagogical Model

To tackle the design questions of selecting a suitable learning model for MOOC, we form relationships between domain model (DM), pedagogical model (PM) and learning model (LM). Then, we need to analyze the educational needs of typical students to build PM. For PM design, we list learning theories and values to track in Table 2 and Table 3 based on an extended version of [Sottilare et al \(2013\)](#).

Table 2. Followed theories for Pedagogical Model

	Difficulty
	Proximity
Self Regulation	Progress
Theory:	Effort
Goal Setting,	Effectiveness
Self- Assessment,	Perceived success (strength
Self Reflection	/weakness)
	Personal Interest
	Improvement and Traits
Social and Constructivist Theory:	Attention
Recruitment, Degree of Freedom, Direction, Critical Features, Frustration control, Demonstration, Teachable – peer agents.	Interest (General) & Interest (Specific)
	Goal setting – Goal commitment
	Ability for Degree of Freedom
	Task (domain) difficulty
	On/off task behavior
	Affective States and traits
	Session difficulty
	Patterns of interaction
Motivation (Self Determination) Theory	Style of language
	Type of feedback (reaction)
	Positive Trust
	Satisfaction
Autonomy, Relevance, Competence	Free decision making
	Preferences and interest
	Value
	(Gagné & Deci, 2005)
Interest (Situational) Theory	Attention
	Levels of learning
	Goals

Table 3. Followed values and variables for Pedagogical Model

	Item Rating
Cognitive load and item difficulty	Trails
	Error/Misconceptions
	Success rates
	Time spent (latency)
Intellectual Traits	Intellectual abilities /prior knowledge
Learning styles	Accommodator
	Converger
	Diverger
	Assimilator
	(Kolb,1985)
	Visual learning
	Auditory learning
	Read/write learning
	Kinesthetic learning
	(Rosenberg & Burkert 2015)
Felder-Solomon Learning Styles	Active/Reflective
	Sensing/Intuitive
	Visual/Verbal
	Sequential/Global
	(Felder&Solomon,2014)

As given in Figure 2, considering the roles of different models in system design, cognitive assistant adaptation and tracking related modules may take large number of variables to adapt in theory. However, in practice, the numbers of variables are relatively small due to scale up issues.

PM can be designed by using different pedagogical strategies as presented in Table 3. In our design, we selected a purposeful PM strategy that is fitting the nature of the pedagogical needs of students' that are learning by engaging interactive dialogs in discussions. For this purpose, specifically considering the dialog-based model of Di-aCog, selected PM should track self-regulation and social constructivist educational needs (and linked values) since these are suitable for learning by dialogs strategies in where the learner arrives at solutions through active participation in dialog interactions. In DiaCog, tracking and adaptation of these values are achieved by LM, which feed the PM. The design process of LM and methods that LM uses explained in the following section.

2.4. Learner Model

Learner models usually infer the diagnosis like a feature to represent the current knowledge state of the students including learning difficulties and misconceptions (Cognati, 2002). The learner model is dynamically updated as students build knowledge thus the model represents about latest understanding of the students (Bull, 2004). Learner models describes the (1) cognitive processes that governs students' interactions, (2) knowledge gap levels between the student and expert, (3) students' behavior patterns, (4) students' characteristics and profiles (Webb, et al., 2001). Using predictive learner models, it is possible to have an insight into the nature of the dialogical interactions and learning. Using these models, each reasoning step can be traced, and the misconceptions can be detected (Johnson and Taatgen, 2005).

DiaCog uses a dialog-based learning strategy as described and modeled in PM. Thus, the learner model also should be dialog based to match with PM. In dialog based learning models, analyzing the knowledge level and learning status in ongoing dialog of students could model students learning. Basic natural language dialogue analysis techniques such as calculating student turns, number of words used in dialog turns, percentage of words per turns by students are indication of learning in an online platform (Core, 2003; Rose et al., 2003; Huang et al., 2015). More sophisticated techniques such as analyzing the different types of speech acts or dialog moves, structure of discourse and contextual meaning are also possible for tracking the learning in dialog (Sardareh et al., 2014; Prylipko et al., 2014; Vail, 2014; Rotaru, et al., 2006).

The power of learner model may change due to the sophistication of linguistic techniques that are applicable for tracking modules in MOOCs (Forbes-Riley, 2007). For instance, some techniques are easy to apply but not meaningfully informative (e.g. turn counts, dialog length) while others provide much worthwhile data for modeling (e.g. speech acts) (Bernsen, et al., 2012). Some of the techniques are well informative and largely available in the ITS literature to apply in for MOOCs but they require more effort like labeling dialog acts or designing computational algorithms for dialog analysis and labeling of corpus.

In DiaCog, we aim to tackle the issue of understanding deeper pragmatic properties of dialog by providing combination of several sophisticated methodologies that enable analyz-

ing the dialog yielding stronger learner models. Using combining techniques in DiaCog's proposed LM design it is possible to have sophisticated tracking functions in MOOCs systems. In DiaCog, LM may be improved further for additional applications for more advanced automatic adaptive MOOC functions that can provide more specific personalized and tailored instruction in addition to the pedagogical strategies that PM delivers as discussed above.

LM strategies for DiaCog can be constructed using machine-learning approaches (Webb, et al., 2001). However, requirement of explicitly labeled data is one of the biggest challenges of machine learning approaches for learner modeling and may be challenging for DiaCog's LM design. Because the correct labels may not be available from simple observation of dialogs, these labels may require a manual coding or an algorithm for label clustering (Fereday et al., 2006). After determining correct labels, speech acts may represent deeper pragmatic properties in dialog, which informs the PM about students' status. Fortunately, DiaCog interface provides a partially shortcut solution for the issue of manual labeling of speech acts. Since DiaCog interface requires users to indicate their intention using speech acts specially designed and labelled as "dialog moves" in the dialog interaction interface, DiaCog easily understand and categorize the speech acts when users build their expressions in ongoing dialogs (Yengin and Lazarevic, 2014).

Tracking students' learning (knowledge status) and comparing with expert knowledge universe handled in DiaCog as illustrated in Figure 3. To track students' learning and knowledge status, DiaCog compute the semantic match between all ideal student interactions in a dialog and compares it with an expert knowledge domain map encoded. Comparing students' current state of learning and knowledge of content with expert knowledge rule spaces is mapped in a QMATRIX, which enables learning-knowledge level for tracking students (Lee and Sawaki, 2009). The use of QMATRIX is relatively well-known technique in rule space learner models such as the "Additive Factor Model" (AFM) (Li et al., 2011) that is using the "Item Response Theory" (Embretson and Reise, 2013). AFM is good model for detection of students' prior knowledge, which can be used to predict later performances. DiaCog's LM design uses same principles for this purpose.

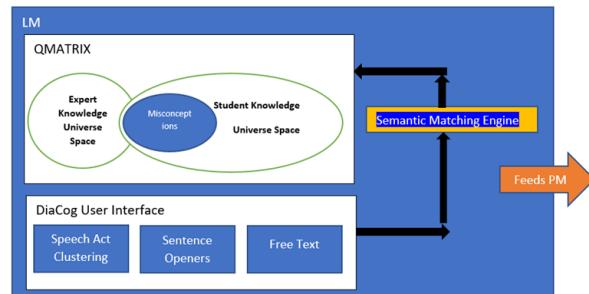


Figure 3. LM Design for DiaCog

To map student knowledge and compare it with expert knowledge in QMATRIX, DiaCog needs to know whether students have similar knowledge structures with the expert domain knowledge. In simple words, DiaCog needs to compare the student dialogs with the expert knowledge. If there is a match between student knowledge and expert knowledge; it is mapped in QMATRIX using variables that show the student knows a knowledge or content object. If there is no match, this is mapped, as the student has no knowledge. If there is a match leading a possible misconception, this is mapped as misconception in QMATRIX.

To understand if there is any matching or not, DiaCog must analyze the student input texts in ongoing dialogs. This function is carried in DiaCog by a "semantic matching" engine that measures semantic relatedness using a direct measure which is a stronger and sophisticated technique rather than words analysis. DiaCog "semantic matching" engine uses "cortical.io Retina API" services to make direct semantic comparison of the meanings stored in students' dialogs. Using semantic relations, DiaCog is capable to measure whether participants of dialogs talk (know) about on the same concepts with the expert domain knowledge universe by applying natural-language processing techniques based on the distributed representations of text segments grounded in a neuro-computational model of semantics (Corticalio, 2015; Chi, 2009). This allows DiaCog to interpret students' conceptual understanding and their meaning closeness. Figure 4 shows a conceptual dialog mapping of students.

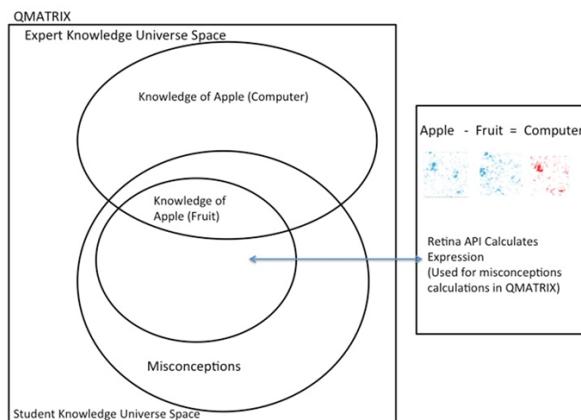


Figure 4. A conceptual dialog mapping of students

According to the example QMATRIX in Figure 4, student knowledge of apple belongs to the knowledge space of fruits. On the other hand, the expert knowledge domain requires student to know/learn the apple as a concept of computer brand Apple (just for giving an example purpose). To detect and understand this student's knowledge level (concept of apple) and the potential misconception, DiaCog's LM should match the expert knowledge space with students' knowledge level. For this purpose, semantic matching engine calculates the distance scores for these knowledge objects (apple as fruit and Apple as computer brand) and compare the scores to see how close they are to each other. If the closeness score is less, this means student is very close to expert knowledge space and well knows the knowledge object. If there is a great distance than that means student doesn't know the knowledge object. If there is an overlap like fruit domain and computer, semantic engine calculates the overlap. The degree of distance in expert and student semantic relatedness scores are calculated using to the median score of overall population score in the system. Finally, if the overlap is not close to expert knowledge space, then it is labeled as misconception and encoded in this space.

3. RESULTS

In this study, design of DiaCog application aimed for implementation as cognitive assistant in MOOCs and discussed DiaCog's functions for enabling tracking students' knowledge levels and behavior in dialogs. The suggested pedagogical model in DiaCog explains strategies fitting the nature of learning with dialogs in discussions. Matching the

pedagogical model, DiaCog' learner model is demonstrated how to use the semantic match technique to compare student knowledge and learning with an expert knowledge domain map to enable tracking learners' knowledge when they engage discussion in cognitive assistant supported MOOCs. These design decisions and techniques for pedagogical and learning models let DiaCog to be an alternative module as cognitive assistants for tracking expert knowledge and detect student mastery levels in learning.

4. DISCUSSIONS

DiaCog's special design and analytical functions opens a door for learner modeling enabling knowledge tracking in dialogs. In future, we plan to train a student and learning model using linguistic features derived from DiaCog by applying machine-learning algorithms to create a model of students thinking processes in dialogs that also can be applied to simulate typical thinking patterns in future dialogs then. Using such models as cognitive assistant implementations in MOOCs may have adaptive pedagogical strategies to the students' state to improve learning experience by providing additional feedback or course materials dynamically to the situations. Also predictive models based on machine learning algorithms may enable MOOCs to understand the users' knowledge level positions in different learning scenarios. In addition, cognitive assistants enabled MOOCs can determine future skill levels of students so it can have a control and guiding mechanism for the course of learning through interactions in dialog or other content.

In future, we are also planning to examine how well different student models perform and generalize with different user populations using MOOCs. We will test the effectiveness of the DiaCog on learning by conducting experiments to validate the success of implementation and pedagogic usefulness of DiaCog in real life.

5. CONCLUSIONS

In conclusion, this paper showed and explained the design of cognitive dialog game (DiaCog) as cognitive assistants. The tracking and adapting abilities of DiaCog as a cognitive assistant was illustrated. The methodology of computing the semantic that match between student interactions in a dialog is used

to inform DiaCog's learner model. Semantic fingerprint matching method used to make comparisons with expert knowledge in order to detect student mastery levels in learning.

As a result, DiaCog tool and applied methodologies can be used for implementing pedagogical and learner modeling to track and adept students' learning.

Finally, this paper discussed the improvements and possible experimental designs to advance the techniques.

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Conflict of interests

The authors declare no conflict of interest.

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AN EMPIRICAL EXAMINATION OF THE RELATIONSHIPS AMONG CREATIVITY, THE EVALUATION OF CREATIVE PRODUCTS, AND COGNITIVE STYLE AMONG CHINESE UNDERGRADUATES

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ABSTRACT

The current study investigates creativity from a creative product perspective. More specifically, we want to know if a connection exists between an individual's creativity and his or her evaluation of creative products. We also want to know what role cognitive style plays in this relationship. The sample (139 second-year undergraduates) was collected from an art and design program of an institution in Macau. Convenience sampling was used for the current study. The present study found partial support for the associations between cognitive style, creativity, and evaluations of creative products. Based on zero-order correlations, visual and verbal cognitive styles were moderately and positively correlated to three components of CPSS (novelty, resolution, and elaboration and synthesis). The results of the SEM further confirm this relationship between cognitive style and CPSS ($r = .69, p < .05$).

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1. INTRODUCTION

A significant number of studies from different fields, including cognitive and developmental psychology, neuroscience, education, business management, and arts, have contributed to advancing our understanding of creativity in people (Hadani and Jaeger, 2015). With regard to assessing creativity, asking respondents to produce creative products is considered one of the more valid methods (Kaufman, Bear, and Cole, 2009; Tsai, 2016a). As Kaufman and Baer (2012) state, “when it comes to judging real-world creative products ... they ask experts. Not everyone will agree with every expert opinion. Yet there is no higher court of appeal” (pp. 83-84).

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Runco, Paek, and Jaeger (2015) examined funded papers published by three major journals related to creativity: *Creativity Research Journal*; *Psychology of Art, Creativity, and Aesthetics*; and *Journal of Creative Behavior*. Among them, the topic of creativity accounted for 22.5% of a total of 707 papers. They also found that three major funding sources supporting research on creativity and giving out the largest number of awards were in Asia: the National Science Foundation, Ministry of Education of China, and Social Sciences and humanities Research Council of Canada. Although these numbers reported in their paper were remarkable, the authors concluded that creativity research is still not supported in the global market.

Although creativity is regarded as an important topic in society as a whole, it seems that the market for creativity is nowhere near its full possible momentum. Therefore, the current study investigates creativity from a creative product perspective. More specifically, we want to know if a connection exists between an individual's creativity and his or her evaluation of creative products. We also want to know what role cognitive style plays

in this relationship. To our knowledge, the empirical studies examining these three variables are limited; more research is needed to explore this line of thought.

Creativity and imagination are used interchangeably. Creativity is treated as complex and multifaceted in nature; there is no universally accepted definition of creativity in the literature. With regard to the characteristics of creativity characteristics, Treffinger, Young, Selby, and Shepardson (2002) clustered four categories: generating ideas, digging deeper into ideas, openness and courage to explore ideas, and listening to one's inner voices. *Generating ideas* concerns cognitive abilities such as divergent thinking, creative thinking, or metaphorical thinking. *Digging deeper into ideas* is related to cognitive characteristics such as convergent thinking or critical thinking. The *openness and courage to explore ideas* category involves addressing some personality traits. Finally, *listening to one's inner voice* concerns a level of personal understanding, vision, and commitment (viii).

In their white paper on promoting creativity in children, Hadani and Jaeger (2015) argue that seven critical components that should be addressed for successfully facilitating creativity in the classroom: (a) imagination and originality: pretend play is an effective tool for children to exercise their imagination and express original ideas; (b) flexibility: exposing children to diverse experiences and encouraging them to be open minded will enhance flexible thinking, which is an important element in the creative process; (c) decision-making: creative ideas stem from three stages—problem identification, divergent thinking, and evaluation—and it is a cyclical process—namely, developing accurate evaluations about what is best and creative idea is an important skill to learn; (d) communication and self-expression: effective communication is an important tool for not only expressing an individual's unique ideas but also making audiences understand them—metaphor and humor are two vital devices to express thoughts; (e) motivation: when children are intrinsically motivated without the promise of a reward, they are more likely to be creative; (f) collaboration: successful peer collaboration can lead to important contributions to group creativity; and finally, (g) action and movement: regular exercise and physical motion can boost children's creative potential. Overall, Hadani and Jaeger delineated their arguments supported by empirical studies and most importantly, they also provided useful tips and activities to enhance

children's creativity in their appendix.

With regard to creativity assessment, Treffinger, Young, Selby, and Shepardson (2002) pointed out four different approaches to gather data about individuals' creative potential: (a) behavior or performance data (actual creative products and performances); (b) self-report data (e.g., attitude inventories, personal checklists, or biographical inventories); (c) rating scales (e.g., using ratings by teachers, parents, or peers); and (d) tests administered under standardized conditions. Treffinger, Young, Selby, and Shepardson (2002) further suggested that it is unwise to count on a single instrument to capture individuals' creative strengths (xii-xiii).

According to the monograph of Treffinger, Young, Selby, and Shepardson (2002), creativity can be measured and, most importantly, creativity can be assessed in a systematic manner. A number of scholars have proposed different definitions of creativity that place different emphasis on creativity. Among them, creative products and outcomes are one of the approaches for assessment (Tsai, 2016b).

Several students of creativity believe that evaluating creative products or performance via experts in that domain is superior to other methods because this seems to better reflect individual real-life creativity (Baer and McKool, 2009; Carson, Peterson, and Higgins, 2005). Among them, Amabile (1982) proposed a consensual definition of creativity: "a product or response is creative to the extent that appropriate observers independently agree it is creative. Appropriate observers are those familiar with the domain in which the product was created or the response articulated" (p. 1001). Based on Amabile's consensual assessment technique (CAT), a number of requirements and procedures are needed for properly assessing creative products: first, expert judges who are familiar with the domain need to be recruited; second, the judges must make their assessments independently; third, these judges should not be given specific criteria for judging creativity; and fourth, judges should be instructed to rate the products relative to one another on the dimensions in question (p. 1002).

The main reason for supporting this method is grounded in the notion that "Nobel prize committees do not apply rubrics, complete checklists, or score tests. What do they do? They ask experts. The most valid assessment of the creativity of an idea or creation in any field is the collective judgment of [the] recognized experts in that field" (Baer and

McKool, 2009, p. 2). One of the merits of the CAT is the ability to measure gardenvariety creative products. More specifically, as Kaufman, Lee, Baer, and Lee (2007) pointed out, “there is no more objective or valid measure of the creativity of a work of art than the collective judgments of artists and art critics” (p. 98). As a result, many creativity scholars highly support the use of CAT, in the assessment of individuals’ creativity (Kaufman, Baer, Cole, and Sexton, 2009).

Cognitive style refers to how people process and represent information (Mayer and Massa, 2003). From this perspective, individuals can be differentiated from visualizers and verbalizers, where the former prefer using images to process and present information, and the latter prefer using words. Mayer and Massa (2003) examined 14 measures by using exploratory factor analysis with varimax rotation and the results suggested that the visualizer-verbalizer dimension is multifaceted, including individual differences in ability, style, and preference. More specifically, for cognitive ability, people with high spatial ability have a tendency of high proficiency in creating and manipulating spatial representations. As far as cognitive style is concerned, visualizers usually prefer visual modes of thinking. Finally, regarding learning preference, visual learners prefer instructions involving pictures.

Cognitive style has been extensively researched in the education literature. For example, there are studies on learning systems (Lo, Chan, and Yeh, 2012), academic performance (Al Salameh, 2011), spatial experiences (Erkan Yazici, 2013), self-efficacy (Harder, Czyzewski, and Sherwood, 2015), and learning strategies (Shi, 2011). A number of studies have focused on the relationships between cognitive styles and creativity (e.g., Dew, 2009; Kozhevnikov, Kozhevnikov, Yu, and Blazhenkova, 2013; Noppe, 1985; Pektaş, 2010). These studies suggest that different cognitive styles have effects on real-life creative behavior. For instance, after conducting a battery of cognitive tests on Canadian college students, Choi and Sardar (2011) used a step-wise regression analysis to find that spatial abilities predicted visual cognitive style and in turn predicted visual learning preferences. Vocabulary knowledge predicted verbal cognitive style, but not verbal learning preferences. Based on the object of the study, our sample was art and design undergraduates; therefore, the current study especially employed visual-verbal preferences as their cognitive style, which might reflect the specific nature of our

subjects.

The main purpose of the current study was to explore the interrelationships among individuals’ creativity, their ability to assess creative products, and their cognitive styles. The unique contribution of the present study lies in the composition of the sample. The current study recruited art and design students to provide more information for art and design educators to facilitate creativity in their classrooms. Another important contribution is to that the scarce research concerning the three target variables (individuals’ creativity, their ability to assess creative products, and their cognitive styles). Thus, following this line of thoughts, we asked two questions: (a) Is there a relationship among creativity, evaluating creative products, and cognitive style? And (b) if so, what is the interaction among these relationships?

2. MATERIALS AND METHODS

The sample was collected from an art and design program of an institution in Macau. Convenience sampling was used for the current study. Participants were 139 second-year Chinese undergraduates recruited from five classes; among them 81 were women, and 58 were men. The average age of the students was 21.11 years (SD = 3.35 years). These recruited students received 40 MOP (about 5 USD) as their incentive for participating in the study. All participants signed consent forms and were assured of confidentiality and anonymity.

The Creative Product Semantic Scale (CPSS; Besemer and O’Quin, 1986) was used as a measurement to evaluate creative products. The development of the CPSS was based on the Creative Product Analysis Matrix (CPAM; Besemer and Treffinger, 1981), which is intended to help nonpractitioners evaluate creative products in a systematic manner. The CPSS involves three dimensions—novelty, resolution, and elaboration and synthesis—and is scored on a 7-point Likert-type scale with 55 item pairs. Each of the nine subscales is created using four or five items of pairs of adjectives (Besemer, 1998).

For our study, we used a 15-item CPSS (White, Shen, and Smith, 2002), which was translated from English to Chinese by the researcher, collected from the original 55-item CPSS, with three of the eleven original subscales being used—originality, logic, and well craftedness. Each of the three subscales had

five items, which consisted of three dimensions: novelty, resolution, and elaboration and synthesis. The main reason for using this abridged version of the CPSS was that Karen O'Quin, one of the scale's original developers, recommended that the 15-item CPSS can avoid the fatigue created among evaluators by using the longer instrument (White et al., 2002). The scoring of the CPSS is constructed by taking the mean of the items that make up the sub-scale. For example, the subscale *original* has five items (pairs of adjectives): over-used-fresh, predictable-novel, usual-unusual, unique-ordinary, and original-conventional. A participant's score for *original* is computed by taking the mean of the scores of these items. Finally, the scoring of the CPSS of the three dimensions was done by using the average scores of three chair works for evaluation. Regarding reliability analyses for the CPSS, Besemer, 1998 reported a coefficient alpha for the novelty dimension from .84 to .86, for resolution from .79 to .85, and for elaboration and synthesis from .84 to .87. Additionally, through the use of confirmatory factor analysis, a three-factor model was also confirmed and validated.

Abbreviated Torrance Test for Adults (ATTA; Goff and Torrance, 2002), a shortened version of the Torrance Test of Creative Thinking (TTCT; Torrance, 1966), was used to measure creative thinking ability. The ATTA uses three tasks (one verbal task and two figural tasks) to measure the creativity of adults by quantifying figural and verbal creative potentials, which consist of four abilities: fluency (quantities of produced ideas), originality (uncommon or unique ideas), elaboration (embellishing ideas with details), and flexibility (processing information in different ways). In our study, fluency, originality, elaboration, and flexibility were calculated, guided by the ATTA manual.

The current study used the Chinese version of ATTA (Chen, 2006), which has been extensively tested and has proven its validity in the Taiwanese sample (Shen and Lai, 2014; Wang, 2012). Chen (2006) reported that the test-retest reliability was .340–.682 ($p < .01$). The verbal part of the correlational coefficient in criterion-referenced creativity indicators was .457 ($p < .01$), and the figural part was .368 ($p < .01$). Since the participants in the current study were going to be young Chinese adults in Macau, the ATTA was selected as a measurement tool.

We used the Verbalizer-Visualizer Questionnaire (VVQ; Richardson, 1977) to assess

the visualizer-verbalizer dimension. The original VVQ contains 15 items and asks participants to judge how they use to their style of thinking via a true-false response. The current study used a 7-point Likert-type scale, ranging from 1 (strongly disagree) to 7 (strongly agree), following Mayer and Massa's (2003) suggestion. Mayer and Massa reported that the Cronbach alpha for the VVQ was .71. Two averaged scores were calculated: one for verbal cognitive style and one for visual cognitive style.

The participants were first informed of the purpose of the study and the procedure of the test. They were asked to provide basic information, such as their gender and age. Then the ATTA was conducted, and each task was allowed three minutes for completion. It took about 10 minutes to finish this session. Finally, our respondents were asked to evaluate creative products via the 15-item CPSS and the VVQ. It took about 20 minutes to complete the evaluation. The whole process was completed within 30 minutes.

Inspired by Besemer's (1998) study, the current study used three chairs as the prompt and collected them from the Vitra Design Museum (<http://www.design-museum.de/en/collection/100-masterpieces.html>). On its website, the museum exhibits 100 masterpieces of chairs from 1900 to 1990. The criteria for selecting chairs is highly novel and also beyond the expected functionality of the chairs for real-life use. Three slides of three chair illustrations as stimulus items were selected by the researcher and evaluated by our participants as follows: Marc Newson, *Lockheed Lounge*, 1985/86; Verner Panton, *Living Tower*, 1968/69; and Achille and Pier Giacomo Castiglioni, *Mezzadro*, 1954/57.

3. RESULTS

Pearson correlation coefficient was used to examine relationships among nine variables. Table 1 shows that fluency was positively correlated with originality, elaboration, flexibility, novelty, and resolution. There were no statistically significant correlations between originality and other variables. Elaboration was only statistically significant correlated with flexibility. Novelty was positively correlated with resolution, elaboration and synthesis, and verbal and visual cognitive style. Elaboration and synthesis was also positively correlated with verbal and visual cognitive style. Finally, verbal and visual cognitive styles were posi-

tively correlated with each other.

Table 1. Pearson correlation coefficients among nine variables.

Variable	1	2	3	4	5	6	7	8	9
1. Fluency	--								
2. Originality	.23**	--							
3. Elaboration	.20*	.13	--						
4. Flexibility	.34*	.12	.27**	--					
5. Novelty	.18*	.01	.03	-.05	--				
6. Resolution	.17*	.06	-.01	-.01	.51**	--			
7. Elaboration and synthesis	.16	.11	.10	.09	.51**	.74**	--		
8. Verbal cognitive style	.11	.11	.12	.02	.42**	.38**	.42**	--	
9. Visual cognitive style	.05	.04	.10	-.01	.48**	.45**	.52**	.61**	--

To better understand the interactions among these variables, structural equation modeling (SEM) was used. A visual diagram is shown in Figure 1.

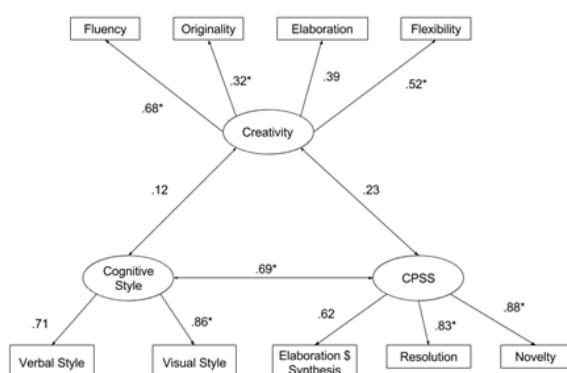


Figure 1. Standardized coefficients for model of creativity, cognitive style, and CPSS.
 * $p < .05$.

Overall model fit shows that $\chi^2 = 26.89$, $df = 24$, $p = .31$, $\chi^2/df = 1.12$, $GFI = .959$, $CFI = .991$, $NFI = .992$, $RMSEA = .03$. Based on Hair, Black, Babin, Anderson, and Tatham's (2006) guidelines for establishing acceptable model fit, the results show that our model attained a reasonable good fit. When examining the relationships among creativity, cognitive style, and CPSS, we found that only cognitive style and CPSS were significantly correlated ($r = .69$). The estimates relationships (paths) are also shown in Figure 1. When we looked at the first construct creativity, we found that the estimated regression coefficients for fluency, originality, elaboration, and flexibility, were .68, .32, .39, and .52, respectively, and

the sizes of these coefficients indicated that fluency has the biggest impact on creativity. For cognitive style, we found that visual cognitive style had the strongest impact (.86). For CPSS, novelty had the strongest impact (.88).

4. DISCUSSIONS

The present study found partial support for the associations between cognitive style, creativity, and evaluations of creative products. Based on zero-order correlations, visual and verbal cognitive styles were moderately and positively correlated to three components of CPSS (novelty, resolution, and elaboration and synthesis). The results of the SEM further confirm this relationship between cognitive style and CPSS ($r = .69$, $p < .05$).

Unexpectedly, both cognitive styles were not associated with the four components of creativity (fluency, originality, elaboration, and flexibility). It may be that the VVQ is not a proper measure for capturing creativity as measured by divergent-thinking tests like the ATTA in the current study. Although the VVQ is a major instrument used in research related to the visualizer-verbalizer dimension (Mayer and Massa, 2003), our study seems to suggest that the visualizer-verbalizer dimension did not fit the criterion of creativity. Based on our knowledge, studies involving VVQ and creativity are scarce, and so more research is needed to further confirm connections between visualizer-verbalizer dimension and creativity.

Concerning the relationship between cre-

activity and CPSS, we found that only fluency was positively related to novelty and resolution. This suggests that fluency is probably the most important variable in creativity (Runco and Acar, 2012), which is also supported by our SEM model. Moreover, according to the results from SEM results, creativity was not significantly related to cognitive style and CPSS.

Overall, our findings suggest that individuals' cognitive style, not their creative potential, was related to their assessment of creative products. Our results are consistent with other studies that suggested that individual differences in visual-verbal cognitive style are valid (Choi and Sardar, 2011) and have an impact on the ability to assess creative products. In the SEM model, we found that in cognitive style, visual style is more important than verbal style and in the CPSS, novelty is the most influential variable.

While our results are informative, several limitations should be noted when interpreting the findings of the current study. For instance, we used a divergent thinking test rather than real-life creative performance as the index of creativity. Although divergent thinking tests enjoy popularity in the creativity literature, several issues with the scoring systems were discussed in the literature (Silvia et al., 2008). Moreover, several scholars suggest that the real-life creative achievements generated by participants and evaluated by experts may be better than divergent thinking tests for capturing creative potential (Kaufman et al., 2008). As a result, for further research, it would be prudent to use other approaches and methods to accurately assess creativity. Another salient limitation is that our sample was recruited from one institution and one ethnic group. Cross-cultural studies seem to a promising direction for further validating the current findings. Finally, our study was a correlational study in nature. In terms of research design, using an experimental study can provide robust findings for future researchers to understand the interplay among these three variables.

5. CONCLUSIONS

The relationship among cognitive style, creativity, and assessment of creative products by Chinese undergraduates in Macau was partially supported by our study. In addition to contributing to the literature, the present study has direct implications for instructional prac-

tices in art and design education. Our finding that cognitive style was related to assessment of creative products implies that when educators ask their students to evaluate creative products and provide feedback, teachers should take students' cognitive style in terms of the visual-verbal dimension into consideration. Based on the present findings, visual cognitive style was more important than verbal cognitive style for assessing creative products. This implies that visually based instructional methods should be used and emphasized during the assessment session.

The practical implications of the current study are that for art and design educators, it is necessary to consider their students' cognitive style in order to facilitate creativity in the classroom. In our sample, we found that visual style is more important than verbal style, which might reflect their majors—art and design. Additionally, our study successfully demonstrate that the usefulness of the CPSS. Specifically, in art and design education, peer critique and peer feedback are essential training for students. Consequently, it is suggested that educators could bring the CPSS into their curriculum development. The CPSS could serve as a guideline for art and design students to assess others' works. Finally, we used ATTA as the indicator of creative potential. In the creativity assessment market, there are numerous possible options for researchers to use. We suggest that for future researchers alternative method is beneficial. For example, we could ask participants to create real art and design works and then these design works could be evaluated by experts. The researchers could employ the CAT, which has been discussed in our literature review. In short, the current study presents some aspects of creativity, which has important implications for students of creativity.

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Conflict of interests

The author declare no conflict of interest.

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THE METHOD OF GLOBAL READING FROM AN INTERDISCIPLINARY PERSPECTIVE

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ABSTRACT

Primary literacy in Macedonian education is in decline. This assertion has been proved both by the abstract theory, and by the concrete empirical data. Educational reforms in the national curriculum are on their way, and the implementation of the method of global reading is one of the main innovations. Misunderstanding of this method has led it its being criticized as a foreign import and as unnatural and incongruous for the specificities of the Macedonian language. We think that this argument is wrong. That is why this paper is going to extrapolate and explain the method of global learning and its basis in pedagogy, philosophy, psychology, anthropology and linguistics. The main premise of this paper is the relation of the part to the whole, understood from the different perspectives of philosophy, psychology, linguistics and anthropology. The theories of Kant, Cassirer, Bruner, Benveniste and Geertz are going to be considered in the context of the part – whole problem, by themselves, and also in their relation to the method of global reading.

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1. INTRODUCTION

In the past decade the Macedonian education in general and particularly the Macedonian language classes including the initial literacy have fallen into a continuous and worrying recourse. This is not a speculative note, but an assertion that is backed up by the theoretical knowledge of didactics and methodology and the empirical data obtained from research by relevant institutions. Let's begin with the theory.

As early as the symposium that took place in Ohrid in 2011, titled *Education Between The Traditional and the Modern* was pointed out that there are serious problems in the objectives stipulated in the curriculum for first and second grade Macedonian language

in the primary education, as well as a notable discrepancy between those objectives and their compatibility with the text-books.

Demanding knowledge and skills which the students are not developmentally capable to fulfill at such an early state in their education, disrespecting the basic didactic principles in relation to the ratio illustration-text in the textbooks, as well as some methodical inconsistencies in the curriculum, for example "distinguishing the capital and the lowercase letters", although there are only 3 letters in the Macedonian language which have an apparent difference (A-a, Б-б, Е-е). It is exceptionally important to emphasize the decision for reestablishment of the parallel teaching of writing in block and cursive letters (a concept abandoned in the 60's because of its inefficiency) which is especially theoretically unsustainable. We can end this infamous streak with one last note: certain goals from the second grade Macedonian language curriculum are only a repetition from the first grade goals. Having said that, the educational continuity is stopped and regression occurs ([Delcheva 2013, 181-185](#)).

These are some of the theoretical notes; now we can point out concrete empirical data.

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During 2016 the *Step by step* foundation conducted research for evaluation of reading and mathematics (EGRA and EGMA). Here are the results of the reading research, which we will quote entirely:

“At a national level, the students have good results in recognizing and accurate pronunciation of the letters, but the skills needed for fluid reading of a short text and its understanding are not well-developed, regardless of the language of instruction. The understanding of the read text is a great challenge for the second and third graders. The results show that the students cannot achieve the international standard to be able to answer 80% of the asked questions, in any language of instruction. Longitudinally, the fluent reading and the understanding of the read are improving in the students of the fourth grade, but the understanding of the read is below the international standard of 80% correctly answered questions about the text. The statistical analyses showed that the two main factors for successful reading in all languages of instruction in both grades are developed reading skills prior to school enrollment and the availability of books at home. Students who have more books at their home also have better skills for understanding of the read. Greater involvement of the parents, the availability of more books and other reading materials, as well as the popularization of the libraries can contribute to improvement of the reading skills. Any intervention in the field of reading should be directed towards the students of satellite schools, students who have not enrolled in preschool institutions and the children whose parents have only primary education or no education at all” (Delčeva 2003, 89).

The *Step by step* research clearly shows that the results are unsatisfactory and they do not meet the international standards. In view of the above we can say with certainty that these bad results of the children in relation to the logical reading are a consequence of the defective program layout for Macedonian language teaching and the inadequate didactical-methodic position. There are undergoing reforms which aim to surpass these inconsistencies. According to the new programs, it is provided that the child in first grade should only read globally, while in the second grade the process of literacy through the analytically-synthetic voice method with global reading elements begins.

At some point, the integration of global reading into the curriculum was highly misunderstood. The main (and maybe the only) ob-

jection is that our language (Macedonian) that has a phonetic orthography is not impressionable for this method that comes from Western European countries where the languages generally have etymological orthography. The main goal of this paper is to show that this objection is not valid. In the first part of the paper we are going to give three different perspectives on one problem: the relation of the part to the whole. In the second part we are going to define global reading and contextualize it in the frame of the part – whole problem: the education of the children substantially depends on the answers we are going to give on this questions. The relation of the letter to the word and of the word to the sentence is just concrete manifestation of this general problem.

2. THE RELATION OF THE PART TO THE WHOLE

2.1. Kant, Cassirer and the transcendental philosophy

Philosopher Emanuel Kant's Copernican revolution conducted in *The Critique of Pure Reason* has set the building blocks of modern epistemology and psychology. We can say a lot about the discoveries that came out of this book, but we are interested in something concrete. Kant considered that the mind is the one that gives shape to the world. We cannot say anything about the world except that it is “a thing in itself”. In Kant's philosophy the world and the mind are exchanging their places; the mind is primary, active and constructive, and the world is secondary, passive and constructed. The transcendental of the mind is the one that constructs the world in “synthesis of apperceptions”, and always as a coherent image in which the whole precedes the parts. That means that the perception, the experience and the interpretation are essentially inseparable. Every perception is a simultaneous organization and interpretation of the sensory experience. For example, the house is not perceived as a collection of windows, doors, walls and a chimney, but rather as a house in its entirety or as a totality that can later be disassembled to its basic elements. In Kant's opinion, in the primary act of perception, the parts are subservient to the concept which organizes them- in this case, the concept of the house (Kant 2012).

Cassirer recognizes Kant's discoveries, he upgrades and expands them. That which Kant made for the mind, Cassirer is making

for the entire culture through adding the concept of symbol. He thinks that our entire experience is perceived through this mediative concept. We do not have any direct experience to the world itself, but the objects of the world are always perceived through the different symbols which they replace. Eco's defines the symbol quite clearly as "everything that, on the grounds of a previously established social convention, can be taken as something standing for something else" (Eco 1976, 15). The Bifurcation symbol-object is false and impossible, because the symbol is a necessary prerequisite for every experience (Cassirer 1961, 82). The culture, to Cassirer is a manifestation of different symbolic forms that shape our experience (language, myth, science, art etc.), and the criticism of the mind must be transformed into criticism of the culture.

It is especially important that Cassirer accepts Kant's premise about the predominance of the whole over the part. The news is that "the whole" in his theory is the culture itself as a system of symbols. In this part of the introduction from *The philosophy of symbolic forms* it is clearly specified that: "Thus the particular can be posited only on the basis of a universal schema which is merely filled with new concrete content as our experience of the *thing and its attributes* progresses... "All these relations disclose the same fundamental characteristic of consciousness, namely that the whole is not obtained from its parts, but that every notion of a part already encompasses the notion of the whole, not as to content, but as to general structure and form. Every particular belongs from the outset to a definite complex an in itself expresses the rule of this complex" (Cassirer 1980, 102). Culture is the one that synthesizes and shapes the flying pieces of our experience.

2.2. Emile Benveniste and the primacy of the sentence

Emile Benveniste, maybe the most appreciable heir of Ferdinand De Saussure, the father of structural linguistics, in 1964 publishes the essay *The Levels of Linguistic Analysis* in which he gave interesting and important remarks on the nature of language and its connection with signification and meaning.

He thinks that the sign (the word) is a middle category that can be decomposed into lower constitutive units, in this case the phoneme and the merism, but at the same time that it can be integrated into the highest lin-

guistic form – the sentence. When a linguistic unit is being decomposed, it is actually being reduced to its formal elements. This process of reduction made a lot of linguists think, that they could completely disregard the notion of meaning in language, and to replace it with mathematical formulae, that reduce the functioning of language on the possible combinations of its formal elements. This labor, according to Benveniste is Sisyphean, because meaning has central relevance on every level of the functioning of language. "In relation to the unit of the written word, the letters that compose it, taken one by one, are only material segments that do not retain any portion of the units. If we compose SATURDAY by assembling eight blocks, each of which bears a letter, the T block, the A block, etc., will not constitute an eighth or any other fraction of the *word as such*" (Benveniste 1971, 107).

When the word enters into the sentence and enters a higher level on the linguistic hierarchical structure, it undergoes a substantial transformation; it undergoes a transition from quantity to quality, said in Hegelian terms. The sentence, as defined by Benveniste does not depend on the length: the sentence can be composed of only one word. The context of its utterance is the thing that is essential. That means that the sentence is in the domain of the discourse. Benveniste's defines discourse like this: „Discourse must be understood in its widest sense: every utterance assuming a speaker and a hearer, and in the speaker, the intention of influencing the other in some way" (Benveniste 1971, 209). By abandoning the domain of language as a system it enters the domain of language as an instrument of communication. When language is observed as a discourse, it takes its intuitive form as an organic totality of interdependent elements that is directed to communication and the production of meaning. The abstract analysis of its formal elements is abandoned.

The consequences of Benvenistes are more than obvious. Once again, we reach the same conclusion that the whole necessarily precedes the part. Every constitutive unit of language, from the lowest merism, to the phoneme and the sign get their its function and meaning only in the context of the sentence. The sentence in this purport would have the meaning of discourse or context. Primarily every word has the function of communicating information and meaning, and the meaning is inseparably connected to the context in which it is used.

2.3. Jerome Bruner and the cultural premise of psychology and pedagogy

The American psychologist Jerome Bruner is one of the pioneers of the cognitive revolution in psychology derived as a response to behaviorism, and also one of the first who imports the concepts of *meaning* and *signification* in the science of psychology. As Bogdanova writes, he is part of the second stage of the development of cognitive sciences together with Neisser, Lakoff and Johnson, that brings back the science to the subject (Bogdanova 2017, 146). Especially in his work *Acts of Meaning* he talks about “the nature and cultural shaping of meaning making” (Bruner 1990, XII), and the necessity of psychology becoming a “cultural psychology” and it’s gaining an interdisciplinary boost from philosophy, semiotics, linguistics and etc.

In this paper we are especially interested in how this paradigm shift reflects on his educational theories. He, thinks, same as Cassirer, that culture is one broad outline, a story (he also talks about the narrative nature of culture) that shapes the minds of the people participating in it. The mind cannot and should not be observed as an isolated entity that develops on the basis of its own biological conditioning. On the contrary, the mind has to be taken as „only“ an element in the complex matrix of intertwined meanings, or in other words, as a part of culture. Bruner talks against the „computer perspective“ inspired from the theory of informations, that is interested in the processing of informations that come into the mind. He opposes to (or upgrades) this point of view with the „culturalist perspective“ in which the mind is not observed as machine, or a complicated algorithm, but as an interpreter of meaning – the mind is compared to the reader of a novel: “It leads us directly to the other approach to the nature of the mind – we can call it culturalist. That approach is inspired by the evolutionary fact that the mind cannot exist outside of culture”...”Culture in this sense is superorganic. Its individual expression is manifested by creation of meaning, by giving meaning to things in different environments and different situations...” Although the meaning is “in the head” its roots and its importance come from the culture that creates them” (Bruner 2000, 19).

This culturalist approach to the nature of the mind, necessarily leads to essential changes in the approach to the education of children: “The pedagogical implications of the mentioned are more than obvious. Taking concern

for the limitations that are deeply seated in our mental predispositions that can be outstripped by imbibing influential symbolical systems, one of the tasks of education is to equip people with the required symbolical systems” (Bruner, 2000, 33). If every mind exists in a complex matrix of different symbolic forms, that the main task of education is to perform that symbol acquiring initiation.

Also, as the perspective to the mind is radically widened, the perspective to the education is going to have a wider scale: “Culturalism, for its first premise takes the fact that the education is not an island but a part of the continent of culture (Cassirer 1980, 102). As symbols are always part of the wider context of culture, and education’s main preoccupation are symbols, than education must be about culture. That means that every educational goal has to be in correlation with the broader system of culture. The school does not exist in an isolated void, but as a part of culture. Once more, we can see, but this time from a different perspective that the part is necessarily subordinated to the whole.

3. WHAT IS GLOBAL READING?

The learning of primary literacy in the mother tongue by the method global reading does not take the letter as a primary basis for education, but instead takes the word. Every analysis and synthesis are being thrown off as redundant. Global reading is a method by which students learn to identify and to recognize the whole word before they are introduced to its formal elements, the letters by which it is composed.

Global reading is one of the more advanced and recent educational methods. Its emergence can be seen as a symptom of very concrete factors. In this chapter we are going to explain the method of global reading through its roots and genesis. The causes of the appearance of global reading can say a lot more about its essence.

The first of these factors is the place of “the birth” of this method. It comes from English and French, languages that have etymological orthography, and in which synthetic methods are inapplicable. Also, the analytic – synthetic method needs a complementary tool that will prepare the students for its later application.

This is the main target for critics to attack about the implementation of the global method in the Macedonian curriculum – the

fact that the orthography of the Macedonian language is phonetical. The global method is observed as a foreign product that is not applicable to the specificities of the Macedonian language. We cannot argue with the fact that the method of global reading has a local origin, but that does not mean that the local context is the only reason for its implementation as a relevant educational method. That is a typical logical fallacy. Also, the local context does not restrain the possibility of its being used in a different context, certainly with a previous careful adjustment. The following three factors are going to confirm this argument.

The second factor is the changed living conditions, in which the children are exposed to intensive sensations and are gaining notions and presentations that were previously an exclusive property of the school. The subjection to varied commercials, newspapers, television, internet, posters, picture books, i.e. in the many different forms in which the culture manifests itself, it awakens an interest for reading in the children and it allows them to learn how to read spontaneously and unobtrusively in the preschool period. It should be noted that this primary literacy is not a result of studying letters but from recognizing entire words (globally) in the appropriate context in which they are observed and used. The simple examples from everyday life show that this is possible: if different newspapers and magazines are present in a household, the daily encounter with them leads to remembering the entire title. So, if the parent asks for a specific newspaper, with a specific name (for example, one time to ask for *The Guardian* and the second time for *National Geographic* the child will complete the task correctly and without a problem – ergo, the child reads. The child also recognizes the TV titles i.e. are distinguishing between his favorite cartoon, the interesting movie or the boring news broadcast. The situation is similar with the personal computer, where the child recognizes the tools with no problem and knows exactly how to use them, without knowing the letters. We can also add that the results from a recent research show that the use of computers have a positive effect on the creativity of children (Stošić, Stošić 2014).

All this implies that the child is already reading, not synthetically or analytically, but by recognition, globally. It is introduced in the language from the youngest age by the parents, a fact that psychologists and psychoanalysts point out as especially important in

relation to the crossing of the child in a more complex sphere of existence – the sphere of symbols and culture (Smith 2001, 202-2014). The child's entry into the culture and symbolization means an entry into a new world which is fulfilled with sense and meaning, "Man is an animal suspended in webs of significance that he himself has spun". (Geertz 2007, 15), says the anthropologist Clifford Geertz in this semiotic definition of culture.

The method of global reading is in fact a method that is based on and adds up to this *sui generis* condition of the humanoid species as *animal simbolicum* (Kasirer 1998, 46) or *homo significans* (Barthes 1972, 218), i.e. its existence within culture: "Primary literacy by the global method requires the student to remember the word as a full optical image from which the sense (meaning) of that word arises directly, claim the global method supporters. Reading itself, represents a merging of the graphic image with the word, the speech... nonetheless the child learns to talk in full vocal forms, not by analysis and synthesis, which of course, must be taken into account when introducing the students to the process of reading" (Delčeva 2003, 89). Our argument is also in accordance with the psychological premise of the importance of *visualization* for children, a fact that is emphasized by the psychologists (Makarova, E. A. et al, 2017, 65 – 74).

That is the third factor that influenced the introduction of the method of global reading within the primary literacy-consciousness of humanities about the double nature of the man, as nature and as culture. Bruner's metaphor of education as an island from the continent of culture has proved correct, as a premise and as a confirmation of the global reading method.

The forth, and maybe the predominant factor which confirms the theoretical basis of this method is its respect for the knowledge of philosophers, psychologists and linguists about the predominance of the whole in relation to its constitutive parts.

4. CONCLUSION

The global reading method starts from the premise that the child exists in a web of relevancies in which it intuitively, through the very act of perception, understands and interprets. This method uses this advantage and integrates it in the curriculum; the basis that global reading gives, precedes the analytical-synthetic method, which separates the already

recognized whole to its components. The components cannot make sense outside of the whole in the context in which they are understood and used. We saw that through the theories of Kant, Cassirer, Benveniste, Bruner, and Geertz. Firstly, because of the nature of the mind as Kant points out, then by the complex intertwining of man, culture and symbolism as Cassirer, Geertz and Bruner showed, and lastly by the nature of language and meaning production in language as Benveniste illustrated. That's why global reading is an indispensable foundation for every process of primary literacy.

Conflict of interests

The authors declare no conflict of interest.

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MUSIC EDUCATION IN PRIMARY COMPULSORY SCHOOLS IN CROATIA AND SERBIA FROM 1945 TO 1990, IN THE CONTEXT OF SCHOOL CURRICULA

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ABSTRACT

After the Second World War, one of the priorities of cultural policy in the domain of music was the music education of young generations, which was essential to begin with at an early age. Its goal was to form a versatile person prepared for future work and social tasks, an active participant in the cultural and artistic life of his/her environment. Due to the insufficient researches conducted so far on musical education practices in the immediate post second World War period, in this paper we track the contents of the curricula in Croatia and Serbia. It's our intention to emphasize the similarities and the differences in the music educational processes in the two biggest republics of the former Yugoslavia – from the initial lining on the soviet pedagogy through reforms and changes to a unified conception of schooling on a federal level. The research shows that the curricula were constantly changed and supplemented in the first years after the war. Numerous changes resulted in the changed number of teaching hours and the teaching content, which year by year became more ambitious. The analysis of the curricula from the sixties onwards pointed to new guidelines which advocated the shift from active music playing and acquiring musical literacy to the concept of auditory perception and learning of musicological terminology. Each new syllabus was modified in accordance with the previous one, while taking into account the possibilities of their implementation in practice. Approaching contemporary pedagogical approaches was reflected in the requirements for the application of the model of active participation in the teaching process, the introduction of technological tools and openness to popular music practices.

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1. INTRODUCTION

After the end of the Second World War, a new political regime was established in Yugoslavia. The Communist Party had created the overall political strategy, from interior, exterior, economic to cultural policies, and it had constituted a new system of values. The

monopoly it held over decision making in all areas of social life enabled it to define a new concept of education in accordance with its own vision, as well as to control and direct the process of transformation of the educational system (Koren, 2012). Caring for the youngest was one of the primary activities of the state and party bodies. It was considered that the state as a political organization had the obligation to set up the goals of education, i.e. that young socialist people should be educated to perform appropriate functions useful to the state (Munjiza, 2009).

Along with the construction of educational infrastructure, it was diligently worked on the socialist upbringing of the youngest generation. The teaching process had to be linked to the contemporary reality of the time,

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while education had to be directed towards the versatile development of a student's personality. The teacher had to be not only a knowledge provider but also a politically aware social worker and educator whose role was to educate young generations in the spirit of the Yugoslavian socialist patriotism, love of the country and its peoples and national minorities (Petrović-Todosijević, 2007).

Changes that took place within the state's economic system, which simultaneously followed the development of science and society and the school system in its entirety, enabled music education to take on a more significant place in the school education system over time. Music education, the professionalism of the teaching, music educated staff, became one of the priorities, and at the same time a condition for the successful realization of music teaching in newly established primary compulsory school which in Croatia and Serbia lasts eight years. Observed through a certain timeframe, from the moment compulsory education was introduced in the school system for everybody, and music classes began to be performed primarily through the subject called Singing, later Musical Education, until the moment it got the name it has kept until today – Music Culture (Jeremić, 2009), music education in Croatia and Serbia has gone through numerous changes. The number of classes that varied from one to two per week, a continuous reformation of the curricula, the teaching contents in which goals and tasks of music teaching were set more closely and more specifically – represent only a part of the changes through which the period of the time related to music education in Croatia and Serbia can be observed.

2. FROM THE FIRST POST-WAR YEARS TO THE END OF THE SCHOOL REFORM (1945–1958)

In the first few post-war years, pedagogy and the school system were under the direct influence of the Soviet Union. It was essential for the teaching process to be based on the virtues of etatist values and to be pervaded by the new spirit, the Marxist-Leninist ideology which would, in the future, generate common awareness among the people of the earth (Najbar-Agić and Agić, 2006). The early post-war period was marked by the imitation of the Soviet pedagogy and the uncritical acceptance of its pedagogical practice which the ruling party regarded as progressive. Consid-

ering the fact that in the pre-war period only the youth from wealthy aristocratic families had been educated, the new government encouraged the education of children from less wealthy families, workers and peasants, "the ideologically and professionally shaped future socialist people" (Šarić, 2013, p. 442). The tendency of forming a young person through educational work resulted in the subordination to the category of the desired model, which sought to make the educational group equal in order to suppress the appearance of undesirable elitism. The emphasis was placed on the social conditions and social character of education; a strong ideological influence on education and pedagogy was openly proclaimed. School laws were aligned with federal laws, and all major reforms and changes were based on previously adopted political documents and conclusions.

The starting conditions for educational work were however very unfavorable. The number of illiterate people was great. In rural areas, it was often the case that children had to be absent from classes primarily because of agricultural work or similar obligations (Dobrivojević, 2014). In many places, teaching took place in temporary, inadequate spaces, and the teaching staff was few and insufficiently trained for work. Classes were often conducted by people without adequate qualifications (Puževski, 2003). That period was primarily marked by solving the problems caused by making schools fully state-controlled institutions, by reducing the number of illiterate people, and by creating material conditions for work and teaching. The government gave priority to political and economic issues, while there was no systematic approach in education policy which would result in a complete conception of much needed changes.

After the political conflict and the break-up with the USSR, the period of search for new possibilities, approaches and solutions in school education started. Different models of a compulsory school pointed to the need for a reform of the entire education system. The 1951 People's Schools Act introduced changes in Croatian elementary education, since it proclaimed the general eight-year school compulsory. The transition to eight-year schooling was gradual and different: four-year schools gradually evolved into eight-year schools; the lower grammar school, which became a part of eight-year schooling, was abolished. For the needs of the transformed eight-year school, and on a few occasions, teaching curricula were made and implemented in eight-

year, six-year and four-year schools, as well as in four grades of the lower grammar school, with the prospect of becoming eight-year schools. The fifties and the beginning of the sixties were marked by the school reform, the development of the so-called third path of the self-governing socialist pedagogy and schooling, and the process of a gradual decline in the influence of the state and politically proclaimed ideology on the education system. Numerous discussions and preparations took place during the reform which began in 1953. In 1958, the unique education system at the federal level was finally defined by the adoption of the General Education Law.

The priorities of the post-war policy in the domain of art reflected in an attempt to create an authentic socialist art compliant with the social and political system. One of the important tasks of cultural policy in the field of music was the music education of the young generation, which had to start from the earliest age. Music education belonged to the field of aesthetic education and along with other educational fields (intellectual, moral, work-related and physical) it made up a whole whose goal was to create a versatile man (Pregrad, 1973). With its content, it had to give a specific contribution to the formation of a harmonious personality. Music education was to prepare a young person for his/her working and social role; it was to strengthen his/her confidence and help him/her to make contributions to cultural development and enrichment of the environment in which he/she lived and worked (Požgaj, 1959).

According to the Law on compulsory seven-year education from 1946, while classroom teaching was conducted in the first four grades, subject teaching was conducted in the next three grades. In the first years after the Second World War, teaching music education in Croatia took place under the name Singing. The aim of the subject in the primary compulsory school, at that time taking four years, and according to the Curriculum from 1946, was the development of hearing, voice and pronunciation, and the training of students for their independent and choral singing. Singing classes were conducted one hour per week. The task of the subject was to encourage young students' interest in music and to develop aesthetic and social components of their personalities. The school curriculum envisaged one-part singing, and if possible, two-part singing of children's, folk and battle songs. Lessons had to begin with songs familiar to children and local songs from the area in

which the school was situated, and afterwards to gradually continue with songs from other parts of the country. In accordance with the viewpoint built on the materialistic doctrine, spiritual music was entirely excluded from the school curricula. The connection between music and other educational materials (such as dance, children's games) was greatly encouraged, as was the creation of individual tunes based on suitable children's, national and battle textual templates ([Curriculum for primary compulsory schools in the Republic of Croatia, 1946](#)).

According to the curricula for primary compulsory school from 1948, the main task of the course in Singing was to strengthen patriotic, social, and aesthetic feelings and the joy of life and work excitement through the song. Unlike the curricula from 1946, which required singing by ear, the curricula from 1948 introduced very ambitious requirements of elementary music literacy from the third, i.e. the fourth grade with the help of the Tonika-Do method, "using the notes, the intonator and manual signs" ([Curriculum for primary compulsory schools, 1948, p. 60](#); [Curriculum for seven-year schools, 1948, p. 62–63](#); Duraković, 2016; Duraković, 2017). The reason for providing musical literacy was primarily the desire to have the students quickly and better prepared for choral singing. Choral singing was an important educational part of the young socialist man; a place where students took part in the teaching process as *active participants in work*. In this way, music teaching strengthened education in the spirit of the new ideology. Much attention was paid to understanding song texts, to clear and correct pronunciation, and the vocal technique. In every school, there had to be a choir that was made up of all students. It was thought that "along with proper music teaching based on the curriculum, given time it would become unnecessary to exclude students with so-called weaker hearing" ([Curriculum for primary compulsory schools, 1948, p. 62](#)).

According to the curriculum from 1950, Singing classes were given once a week, except for the fifth grade in which a two-hour weekly instruction included singing, voice development and care, rhythm exercises and music aesthetic education. In lower grades, students sang by ear. By their content, the songs related to the home country, school, animals and various children's experiences. From the third grade, the repertoire spread on to national, patriotic, combat and artistic songs. From the fourth grade, with the introduction

of two-part singing, students gradually adopted the elements of music literacy. They got familiar with the concept of staff; they distinguished notes by duration, tonality, and various measurements. Music dictation was introduced into teaching, as was solmization and the musical alphabet. In addition, listening to selected music works from gramophone records or the radio was included. ([Curriculum for eight-year schools and lower grades of the grammar school, primary compulsory schools and extended courses, 1950; Duraković, 2016; Duraković, 2017](#)).

In 1951, The Ministry of Education issued a new curriculum whose content stemmed from the tendency to synchronize it with the first textbooks, i.e. teaching manuals. In this curriculum, along with the subject name Singing in the first three grades, the name Music education for music classes was introduced in upper grades. The change in the name was explained by the need to harmonize the subject with the learning material, which went beyond singing lessons. The number of class hours remained the same. Together with singing and literacy, the new curriculum included all the usual music-educational fields except for playing: *listening to music* which depended on the conditions of the particular educational institution; *music life* which consisted mainly of the clarification of certain terms related to music culture, and *creative* work. In the fifth and sixth grades, acquiring music literacy referred to getting acquainted with the solmization, alphabet, major and minor scales, interval recognition through hearing, etc. The curriculum envisaged writing the dictation of up to four bars in all tonalities, and rewriting the letter notation into absolute notation. In the seventh and eighth grades, some of the assignments were to transpose melodies from one tonality into another, to write dictation up to eight bars, etc. As an aid in the acquisition of basic music knowledge, it was recommended to use the Tonika-Do method, the numeral method (Galin, Paris, Chevé system) with the help of the modulator and manual signs. In these grades, the teacher was supposed to transfer knowledge on certain great singers and instrumental virtuosos. An active relationship towards a music piece had to be achieved through working on developing music memory and recognition, the ability to distinguish rhythms, melodic movement and the main contours of the music form, composing techniques, etc. Therefore, the teacher was expected to perform short compositions, preferably by Slavic composers (e.g. Chopin, Smetana, Lisinski, Dvořák,

Tchaikovsky, Mussorgsky, Mokranjac, etc.). The so-called internal choir, in which all students participated, was to be organized in each grade. Working with the internal choir took place during teaching, i.e. when the teacher wanted to check whether the students were able to put their acquired knowledge in theory and solfeggio to practice. Next to the internal choir, a school had a representational choir which performed at various events, celebrations, and the like. Taking part in that choir, which was included in the curriculum with two hours per week, was meant for upper-grade students selected by the teacher. A large number of choral performances which represented schools in the public and which accompanied various protocol celebrations created the need to select students with proper intonation, who were able to raise the quality of the performance to a satisfactory level ([Curriculum for eight-year schools and lower grades of the grammar school, 1951](#)).

In 1954, the Curriculum for national four-year and six-year schools and lower grades of the grammar school was published; a year later, the Curriculum was published for people's six-year schools, and then the Temporary Curriculum for the seventh and eighth grades of the primary eight-year compulsory school, in which the content of Music education teaching classes remained very similar to the previous one, and it took one hour per week in every grade ([Curriculum for people's four-year schools and lower grades of primary compulsory schools, 1954](#)).

Similar to Croatia, after the Second World War, the period of numerous social and political changes in the state took place, which incited a series of changes within the Serbian school system. In the curricula which referred to Singing classes in primary compulsory schools in Serbia, significant differences can be seen in relation to the previous curricula, while the teaching content from the first to the fourth grade indicates that the teaching process in this period of schooling was primarily based on singing songs. Conducted one hour per week, Singing classes had, in essence, the goal to: develop hearing, voice and singing abilities of students for individual and choral singing, strengthen patriotic, social and aesthetic sentiments and provide students with the basic knowledge in music theory. The teaching material was divided into general (it was present in the first and second grades, and it meant a preparation for notational singing) and special (it was present in the third and fourth grades, the period in which notational singing

began to get combined with classes of music theory) ([Curriculum for primary compulsory schools with didactical instructions for teaching particular subjects, 1945](#)). This tendency remained present in the next few years. In the decades following the Second World War, the school system was designed in such a way that the content which could be connected to the Orthodox spiritual tradition was entirely excluded from the curriculum. Orthodox music remained almost unmentioned during schooling with the exception of Kornelije Stanković and Stevan Mokranjac, of whom it was merely noted on a few rare occasions and in footnotes that they also practiced Serbian spiritual music. Efforts to modernize teaching posed great problems and required additional for both classroom teachers and subject teachers, who were not yet educated for its implementation in the post-war period.

In this way, in the curriculum for primary compulsory schools from 1947, the acquisition of music literacy, which was supposed to start from the fourth grade, began to be insisted upon with the intention of preparing students for independent singing in class, and also for subsequent two-part or multi-part choral singing ([Curriculum for primary compulsory schools from 1947 and 1948 school years, 1947](#)). Special attention was paid to singing which was accompanied by dancing.

Singing in the choir ([Curriculum framework for primary compulsory schools – elementary teaching in the Federal People's Republic of Yugoslavia, 1948](#)) was considered very important for the future upbringing of students in the spirit of the communal ideology. Joint, choral singing meant that all students should be given the possibility to enjoy an undisturbed music development.

In the curriculum for elementary schools from 1952, Singing was present from the first to the fourth grade with one class per week. Teaching assignments ([Educational Gazette, 1952](#)) for all four grades were presented in the following manner: developing students' hearing, voice and correct pronunciation; developing the sense of rhythm and melody; inciting love of folk and art music in students; providing students with the basic knowledge of music history.

Only a year later, in the curriculum for lower grades of grammar schools and upper grades of eight-year schools ([Educational Gazette, 1953](#)), changes were implemented with regard to the number of planned teaching classes, and music teaching was conducted in the subject Singing only in the first and sec-

ond grades of the grammar school (i.e. fifth and sixth grades of the eight-year school) with one class per week in the fifth grade, and two classes per week in the sixth grade.

In the manual for compressing the teaching curriculum for eight-year schools ([Educational Gazette, 1957](#)) regarding the course Singing, by means of a quantitative reduction of the teaching material and the development of new teaching areas, minor changes were implemented in the schedule of the curriculum and the transfer of the material from one grade to another. In the first and second grades, it was insisted on the children's activity by the use of different teaching aids, while rhythmic exercises and movements were most often performed through dance accompanied by music. In the third and fourth grades, all functions of the C major scale were learned without using the score, which was supposed to be taught in the fifth grade without much verbalism during the teaching process ([Durđanović, 2014](#)).

From the above-mentioned, it is obvious that the curricula in the first post-war period both in Croatia and in Serbia frequently changed: from 1945 in Serbia and from 1946 in Croatia, music teaching included a one-hour lesson per week. It was conducted with the same goal: the development of hearing and singing skills, with a focus on individual and choral singing, and encouraging the development of aesthetic and social skills in students.

Due to the meager capacities of the teaching staff, the first curricula centered on the contents that could be conducted without specific professional competences on the part of the teacher, so most of the teaching process came down to singing by ear.

Very soon, education policy introduced requests for sight singing, so theoretical literacy began to be insisted upon. According to the analyzed curricula, in Serbia, the acquisition of music literacy was introduced in 1947, and in Croatia, a year later. In the fifties, given that some areas had already had seven-year and eight – year schooling, the curriculum in the upper grades was moderately supplemented by the adoption of musical concepts.

In both Yugoslavian republics of the time, in accordance with the policy of the ruling party, the curricula completely excluded the content related to spiritual music. They were replaced by a large number of patriotic songs, and songs related to war, revolution, pioneers, etc. The emphasis on singing in the choir, in the spirit of the communal ideology, was evident first in the Croatian curriculum from 1948, while the same tendency could be

found in the Serbian curriculum one year later. The number of teaching hours also varied in the fifties: e.g. according to the curriculum from 1950 in Croatia, music was taught for 2 hours per week in the fifth grade, while in Serbia, the curriculum from 1953 includes two hours of music teaching in the sixth grade. Only a few years later, in 1954, in Croatia, the number of music teaching hours was again brought back to one hour per week in all grades. It is interesting that in Croatia the subject Singing changed the name to Music education in 1951, while the same change took place 8 years later in Serbia. We come to the conclusion that the curricula in the early period after the war were similar but not identical, while the subject itself was taught under a different name.

While studying the teaching practice of the time, one should bear in mind that despite the detailed insight into the analyzed curricula, the situation in practice was certainly somewhat different; therefore, their implementation should be taken with caution. Due to unequal conditions in the field and the aforementioned difficult situation in the society at large (the poor social status of the population, demolished schools, the lack of teaching staff, textbooks and teaching aids), the first curricula were simply a kind of draft, which was the main source teachers used in accordance with the conditions of the area in which they worked.

Considering the fact that until the end of the fifties it was not customary to mention the names of the persons who took part in the creation of the curricula, their names are mostly unknown. They were designed in a closed circle of a number of people; and they were treated as a collective work by the Ministry of Education.

3. FROM THE SCHOOL REFORM UNTIL THE FALL OF THE SECOND YUGOSLAVIA (1958–1990)

In 1958, the General Law on Schools was adopted establishing a new system of schooling, education and upbringing, and legalizing compulsory eight-year education, while making the pre-school education an integral part of the education system (Krulj, 2011). During the reform process, which lasted a number of years, the importance of professional, innovative and pedagogically trained teaching staff came to light. The ruling party made attempts to replace authoritarian meth-

ods of governance, prevalent in the first post-war years, with more democratic means. In the sixties, with the founding of pedagogical academies and faculties, at which the teaching staff could be educated, a thorough reform of the high education for teachers began. The transfer of the reform concept for primary compulsory schools was long and gradual. Educational pedagogical bodies and ideological commissions of the republics, within the Central Committee of the League of Communists of Yugoslavia, followed the process of harmonizing the school systems of the curricula in Yugoslavia and collecting data on the first experiences and difficulties. Educational goals were aimed at transferring communist knowledge, values and skills to students, and the concept of such an educational system was in complete material and program dependence on the party state (Rajčević, 2016, p. 169).

In Croatia, reform ideas are outlined in the comprehensive book 'The Primary compulsory school – Program Structure' (1958) which is not just a curriculum, but a unique interpretation of the fundamental ideas of the new school. The new school concept included the introduction of group work, free activities, new educational activities that enable students to progress individually, providing assistance to those who fall behind, and working with those who show interest in certain fields of study. The importance of satisfying special interests of individual students in various fields of creativity, culture, art, engineering and sports is emphasized through free activities. The aim was to develop cultural needs by organizing events in schools and taking students to programs outside their school, thus underlining the social role of the primary compulsory school as a cultural center and focal point. There was a more liberal atmosphere in schools, and pedagogical science began to gradually be open to new tendencies.

In 1958, a thought-out concept draft of musical education in primary compulsory schools at the federal level resulted in adopting a new curriculum in 1960. In the curriculum, along with singing, creativity, listening to music, literacy and learning various concepts of musical culture, playing was also introduced, so teachers had to pay attention to the complex task of teaching students how to perform a song on school instruments (Educational structure. Primary compulsory school, 1960). Music education had the highest number of teaching hours by that time: it took place in the first three grades four times half an hour per week, and from the fourth grade, two

hours per week (that is, two hours per week in all grades). In the first three grades of the primary compulsory school music education was based on listening, singing, playing, and creative work. Playing referred to the instruments that students could master without any special difficulties. If the teacher had the necessary knowledge and school instrumentation, he/she was supposed to introduce instruction into playing traditional instruments as well.

From the fourth to the sixth grade, it was necessary to begin making the student's musical perception more explicit and conscious. Music education in these grades consisted of three segments: hearing development (listening, understanding and writing down bars, measures and rhythm, recognition, intonation and recording of scale/diatonic functions in the major and minor, knowing the means of interpretation/basic concepts of dynamics, tempo, articulation, etc., most important chromatic tones, modulation in parallel tonalities, two-part singing, cadences, oral, written, and analytic dictations and music memory exercises); taste development (singing and playing, listening to live and mechanic reproduction, learning and analyzing vocal and instrumental forms and their parts, concluding with a two-part and three-part song based on listening), and education for self-expression (beating, rhythm and tone recording, playing the percussion and simple melodic instruments, sight-singing, creative work, comprehension and appreciation of music, playing instruments). The focus of music education in the seventh and eighth grades was to acquire the basis of instrumental music by becoming familiar with instruments and listening (gramophone records, the radio, concerts, operas, etc.). Knowledge acquired in the previous grades was supplemented with listening observation, learning about musical instruments, types and forms of music, music professions, institutions, etc. ([Educational structure. Primary compulsory school, 1960](#)).

In the second, altered edition of the curriculum from 1964, and the third from 1965, teaching material and music activity were divided in three stages. In the first two (from the first to the third and from the fourth to the end of the sixth grade), the central element of music education was singing songs adapted to the developmental age of the child by their scope, text and aesthetic experience. In the final stage, emphasis was placed on singing the songs with a socially engaged content, including the republic and state anthems and other songs which had a ceremonial character. The field of creativity at all stages implied work on

creative activities. Teachers were suggested to use movement, facial expression and art, voice and tonal improvisations on percussions, text improvisations, melodies, as well as the composition of smaller music pieces, etc ([Educational structure. Primary compulsory school, 1965](#)). The first stage of hearing development and education focused on developing predispositions in students who were to be prepared for acquiring sound, rhythmic, and melodic imagery, and for mastering music literacy with the help of counting rhymes, stories, imitation of rhythms from nature and work, recognition of noises, voices and tones from the environment, memory and reproduction of rhythmic and melo-rhythmic motifs and phrases, song recognition, etc. In the second stage, the acquisition of music literacy began, and the most indispensable theoretical knowledge about rhythm and measure was adopted (observing, performing and recording simple measures and familiarizing with complex combinations; observing, distinguishing, performing and recording rhythmic combinations; identifying, intoning and recording diatonic functions / bars of the scale and melodic elements in the major and minor; singing melodies with solmization, alphabet and a neutral syllable; mastering simple multi-part singing; conscious orientation based on key signatures and intoning in tonalities with three to four symbols in the key signature of the major and minor; familiarizing with the elements of music forms). In the third stage (the seventh and eighth grades), theoretical knowledge was expanded and supplemented with musicological contents (metro rhythmic structure, intonation and theory, managing singing and playing by notes, familiarizing with the themes and importance of areas of musical folklore).

Starting with this curriculum, the number of hours continued decreasing; music teaching was conducted three times for half an hour in the first four grades and two school hours in the second four grades.

Further decrease in the number of hours was brought by the next modification in the school curricula which took place in 1972 ([Our primary compulsory school. Educational structure, 1974](#)). Classes were conducted twice a week half an hour in the first and second grades, two hours from the third to the sixth grade, and one hour in the seventh and eighth grades. The subject changed the name and was now called Music Education; however the concept remained the same. The division into stages became even clearer; however, compared with the previous curriculum, the third

stage didn't directly deal with literacy but with musicological content accompanied by listening to music. In that curriculum, songs accompanied by playing are proposed, and a new development was also the selection of instruments intended for playing; apart from rhythmic instruments, the use of tambourines, melodicas, harmonicas, guitars and mandolins was recommended.

Neither the next, i.e. last change of the curriculum (before the breakup of the former state) from 1984 ([The curriculum of child rearing and elementary education. Linguistic-artistic field, 1984](#)) brought about any conceptual novelty with regard to the previous programs. The curriculum had retained all the previous teaching areas, and more attention was paid to listening to music at all stages. The subject changed its name to Music culture, and it was included in the language-arts educational field. The number of hours remained the same; however, there was no longer the exact number of hours devoted to music education in the classroom, but the total hourly rate for the language-arts educational field was set, which in practice meant that every teacher in this field could decide whether to pay more or less attention to music contents. In the subject teaching, music culture was set for two hours in the fifth and sixth grades, and one hour in the seventh and eighth grades. In this curriculum, a modest attention was paid to popular music which from the middle of the fifties, thanks to radio and television programs, became more and more popular and it had a growing influence on young people.

In Serbia, primary compulsory education reforms which began in 1952 reached their full affirmation in 1959 ([Educational Gazette, 1959](#)). In terms of its organization and content, the new way of teaching was finally rounded up in 1984, but modifications made in that period also affected the change in the name of the subject. The name Singing was replaced in the 1960s by the name *Music Education*, and two decades later this name too was replaced by a new name – *Music Culture* ([Đurđanović, 2017](#)).

In 1959, the Council of Education of the People's Republic of Serbia adopted the Curriculum for the elementary school in the People's Republic of Serbia ([Educational Gazette, 1959](#)), which began to be applied the same year, from the first to the fourth grade in order to be gradually introduced in the rest of the grades every following year. This curriculum changed the name of the subject *Singing* to *Music Education*. The number of hours by

grade was: two hours per week from the third to the sixth grade, while the number of hours for the rest of the grades remained unchanged (one hour per week). The content of the curriculum for the subject Music Education included the following elements: the first and second grades - rhythm through movement and counting rhymes, songs by ear in the range of the fifth or the sixth; the third grade - it was insisted on the distinction of all degrees of the major scale, without writing down the notes, while writing the notation, developing musical taste and free expression and singing of melodies in the range of c1–c2 were intended for the fourth and fifth grades; the sixth grade covered the major and minor keys (up to two symbols per key signature), irregular rhythmic patterns, intervals, homophony and polyphony, two-part and three-part forms; the seventh grade introduced the study of instruments, solely strings; while in the eighth grade, it was continued with the acquisition of the sound and appearance of the wind, stringed and keyboard instruments ([Đurđanović, 2014](#)).

Playing school instruments and listening to music with a goal to develop a sense of good music and a criticism towards negative occurrences in music (the most valuable achievements of musical art) was a part of the Curriculum for the primary compulsory school of 1963 ([Educational Gazette, 1963](#)). The above-mentioned curriculum included the acquisition of musical literacy, intonation and writing down the notes of the scale in the major and minor, singing one-part songs, practicing music memory (rhythmic and melodic) and educating musical taste. The novelty was paying special attention to fostering musical creativity for children.

Unlike the previous curricula, which were based on dull and verbal theorizing, the curriculum from 1974 ([Educational Gazette, 1974](#)), began to relate to the teaching practice. It was emphasized that, in the majority of cases, teachers did not have a plan on how to classify songs for particular grades, and that songs about our revolutionary past and the creation of the socialist motherland were not sufficiently present in classes; therefore, it was suggested that teachers of classroom and subject teaching pay special attention to songs of this type. The curriculum included teaching Music education two hours per week in the third and fourth grades only. It was recommended that classes be conducted half an hour twice a week in the first and second grades due to students' psycho-physical abilities. The goal was to develop at this age musical abilities not

only by singing but also by playing children's games (games accompanied by singing). With respect to the previously-mentioned ones, in its content and tasks, the curriculum set higher demands for the subject itself and teachers, by which it expanded their pedagogical activity and demanded the expertise of teachers in their work. It was also recommended that all knowledge from elementary music literacy be processed on the structure and basis of folk songs and music.

Significant novelties in this curriculum were that every school had the obligation to form a school choir of lower and upper grades (the repertoire would include a variety of musical literature, mass, combat, and artistic songs of national and foreign authors, canons, original folk songs of peoples and national minorities of Yugoslavia), as well as the obligation to introduce optional (school orchestras and vocal ensembles) and free activities (*Musical Youth, After-school Music Lessons for Music Lovers, After-school Lessons for Music Composers*) for musically-gifted children.

The 1976 curriculum for some grades was designed to provide teachers with concrete instructions for the realization of Music Education teaching – to which teaching content one should pay particular attention: singing songs by ear and from the score (songs of the peoples and nationalities of the Socialist Federal Republic of Yugoslavia, songs from the Peoples Liberation War); children's music games; playing children's instruments; free music expression; listening to music; elementary music literacy; recognizing basic music forms and instruments. The content of the songs mostly referred to nature, society, brotherhood and unity of the peoples and nationalities of the Socialist Federal Republic of Yugoslavia, revolution, Tito and post-war construction and reconstruction. It was carefully indicated in the 1976 curriculum that listening to music in the upper grades (the seventh and eighth grades) should be used for getting acquainted with basic music forms (from the curriculum) without going into their detailed analysis (*Educational Gazette, 1976*), and that the primary goal of teaching (in all elementary school grades) was to provide students with general music knowledge so that they could understand the music life of their environment or continue their education in the music school with more opportunities for initiative and affirmation, as well as the application of various forms of their creative work. In this way, the principle of students' activity was incorporated as the cornerstone of Music Education.

In the joint curriculum of educational work in the primary compulsory school (*Educational Gazette 1984/85*), modifications included the change in the name of the subject (Music Education was replaced by the name – Music Culture), and suggestions for didactical manuals and other additional literature which would provide teachers with instructions for conducting lessons were also given. The teaching tasks of Music Culture were largely equal to the previous ones, and they continued to emphasize singing, playing and listening to music as a way to foster students' love and understanding for traditional folk, artistic, but also *popular music*.

We can conclude that the requirements of every curriculum were more ambitious and more complex, especially at the end of the fifties, as it was thought that music education in the upper grades would be taught by professional staff. Improvement was also expected in the sixties, when the teachers who had graduated from Pedagogical academies began to work.

With respect to music fields, alongside singing, creative work, listening to music, acquiring literacy, getting acquainted with music terminology, playing instruments was introduced in Croatia in 1960 and in Serbia in 1963. Likewise, even though the novelty in the Serbian curriculum of the same year included nurturing music creativity, by analyzing the Croatian curriculum, it is obvious that creativity was fostered already in the 1951 curriculum. During the sixties, literacy and music theory continued to be widely present in both countries. In much the same way, in the mid-sixties in Croatia, three distinctive stages that depended on the grade were set: singing by ear – music literacy – processing of musical content.

The insistence on literacy was accorded with the demands of education policy on changing the social composition of the audience and professional musicians in the future. In the socialist society, the acquisition of music knowledge had to be available to everyone, and also to young people who for different reasons couldn't get music education at music schools. Therefore, the curricula were more like the solfeggio curricula than being aimed at the general acquisition of music culture. The general music culture, which focused on further individual music playing, as a preparation for the future participation of a young person in cultural and artistic life, was connected to the third stage. In it, together with the acquisition of music knowledge, particular

songs were suggested to be sung and played on various instruments available to children.

The fulfillment of such ambitious tasks required a higher number of teaching hours, so in the first post-reform years, the number of hours in Croatia ([Educational structure. Primary compulsory school, 1960](#)) was the highest in the history of music education in general. The tendency to reduce the number of hours took place in the mid-sixties – the only curriculum from the seventies in Croatia, that of 1972, introduced an increase in the number of hours in the third and fourth grades to two hours; however, in the seventh and eighth grades, the number of hours was reduced to 1 hour, which was introduced in Serbia by the 1974 curriculum.

During the seventies, two curricula from 1974 and 1976 were in effect in Serbia. Students sang by ear and reading the notes, they played children's music games and instruments; they were encouraged to express themselves freely in terms of music, they listened to music, gained the basics of music literacy, and learned about basic music forms and instruments; hence, the same music activities were performed as in Croatia. In the same year, 1984, the name of the subject changed: in both Croatia and Serbia it became *Music Culture* however with different terms for „music” used in the Croatian („glazba”) and Serbian curriculum („muzika”), coming from the terminological difference in the two language varieties. New requirements came into view, such as the introduction of popular, i.e. pop music in the classroom.

4. CONCLUSION

In this paper, plans and programs, documents and various scientific materials from Croatia and Serbia in the area of music are analyzed and compared. They are important for the historical developments in terms of basic music education, which, by changing its physiognomy and adapting to social and political conditions influenced the overall upbringing and education of students. With the aim of exploring what was happening in music teaching in the period from 1945 to 1990 and the legacy left behind after the independence of Croatia and Serbia, the idea was to systematize the material and find out which similarities and differences were in the setting up of curricula and how it reflected on educational practices.

By analyzing the curricula for music teaching in general primary compulsory ed-

ucation in Croatia and Serbia from 1945 to 1990, one can observe modifications in the number of hours, the name of the subject, and the transition from active music playing and acquisition of elementary musical literacy to the concept of auditory observation and the acquisition of music terminology. The goal of music teaching was to develop listening by ear, promote singing skills, with a great respect for choral music, and to encourage the development of aesthetic and social skills of students.

Unlike the first post-war curricula, which were defined by inarticulate usage of professional terminology, and whose goals and tasks changed every other year, at the end of the fifties, creators of educational policy detected critical areas, corrected the goals and tasks of music teaching and revised music teachers' role in accordance with newly acquired experiences and needs. Each subsequent curriculum was based on systematic professional analyses. The system of work was modified and upgraded, and explanations were carefully elaborated so that they could provide teachers with much more help in understanding the curriculum and conducting lessons.

After the independence of the two countries, music education in the primary compulsory school took on different characteristics by which it was modernized: the goals and tasks, the contents and the concept of the subject were re-evaluated. Thus, for example, an open model that sets listening to music as a dominant activity has been in force in Croatia since 2006, while other areas are variable: they are chosen by the teacher based on the students' interests and the equipment of a school, and, next to the aforementioned, the teacher has the opportunity to choose modes of work and materials necessary for the successful realization of the teaching unit ([Vidulin, 2016](#)).

In the past few years, in Serbia, several EU initiatives have been launched in order to improve the education system ([Vidulin, Martinović Bogojević and Đurdanović, 2015](#)). [Act on the Foundations of the Educational System. Official Bulletin of the Republic of Serbia: Educational Bulletin, no 72, 2009](#), defines and develops *Education standards* next to establishing the system of quality, monitoring and evaluation. The way in which these standards are formulated and set up aims to strengthen the teaching staff in order for the teaching process to be realized, and to harmonize the requirements with a goal to develop competence in students. In order for the student to master the cognitive and aesthetic as-

pect of musical experience, it is necessary for the curriculum to cover four interrelated fields without which it would not be possible to get a high-quality introduction to music. Accordingly, the four areas are: knowledge and understanding, listening to music, performing music and musical creativity articulated through the guidelines which define the requirements of the curriculum, taking into account the lowest, mid-level and highest aspects of students' achievements.

Conflict of interests

The authors declare no conflict of interest.

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